

CHAPTER 2 DRAWING INDEX

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ACCESS POINT TYPES, RADII AND WIDTHS

USE	SECTION	TYPES OF ACESSES	STD DWG	MIN. RADII	MIN. WIDTH	MAX. WIDTH
RESIDENTIAL	CURB SHOULDER	DROP CURB DRIVEWAY — RESIDENTIAL	2-020	FLARED	10 FEET	30 FEET
		RESIDENTIAL DRIVEWAY APPROACH — ASPHALT OR	2-030	10 FEET	10 FEET	30 FEET
		RESIDENTIAL DRIVEWAY APPROACH — CONCRETE	2-035	10 FEET	10 FEET	30 FEET
COMMERCIAL	CURB SHOULDER	DROP CURB DRIVEWAY — COMMERCIAL/INDUSTRIAL	2-025	FLARED	25 FEET	40 FEET
		COMMERCIAL/INDUSTRIAL APPROACH — ASPHALT OR	2-040	10 FEET	25 FEET	40 FEET
		COMMERCIAL/INDUSTRIAL APPROACH — CONCRETE	2-045	10 FEET	25 FEET	40 FEET
INDUSTRIAL	CURB SHOULDER	DROP CURB DRIVEWAY — COMMERCIAL/INDUSTRIAL	2-025	FLARED	25 FEET	40 FEET
		COMMERCIAL/INDUSTRIAL APPROACH — ASPHALT OR	2-040	10 FEET	25 FEET	40 FEET
		COMMERCIAL/INDUSTRIAL APPROACH — CONCRETE	2-045	10 FEET	25 FEET	40 FEET

NOTES:

1. COMMERCIAL AND INDUSTRIAL ACCESS WIDTHS SHOWN ARE FOR TWO-WAY ACCESS ONTO NON-ARTERIALS. MINIMUM WIDTH FOR ACCESS ONTO ARTERIALS IS 35 FEET. SEE TEXT SECTION 2-03 FOR ONE-WAY WIDTHS.

2. FOR ALL ACCESS POINTS IN VERTICAL CURB SECTIONS, A DROP CURB DRIVEWAY SHALL BE USED.

3. FOR ALL ACCESS POINTS TO COMMERCIAL AND INDUSTRIAL USES, THE CURB, GUTTER AND SIDEWALK SHALL MEET H25 LOADING REQUIREMENTS.

SEE TEXT SECTION 2-03



SNOHOMISH COUNTY PUBLIC WORKS

2-010

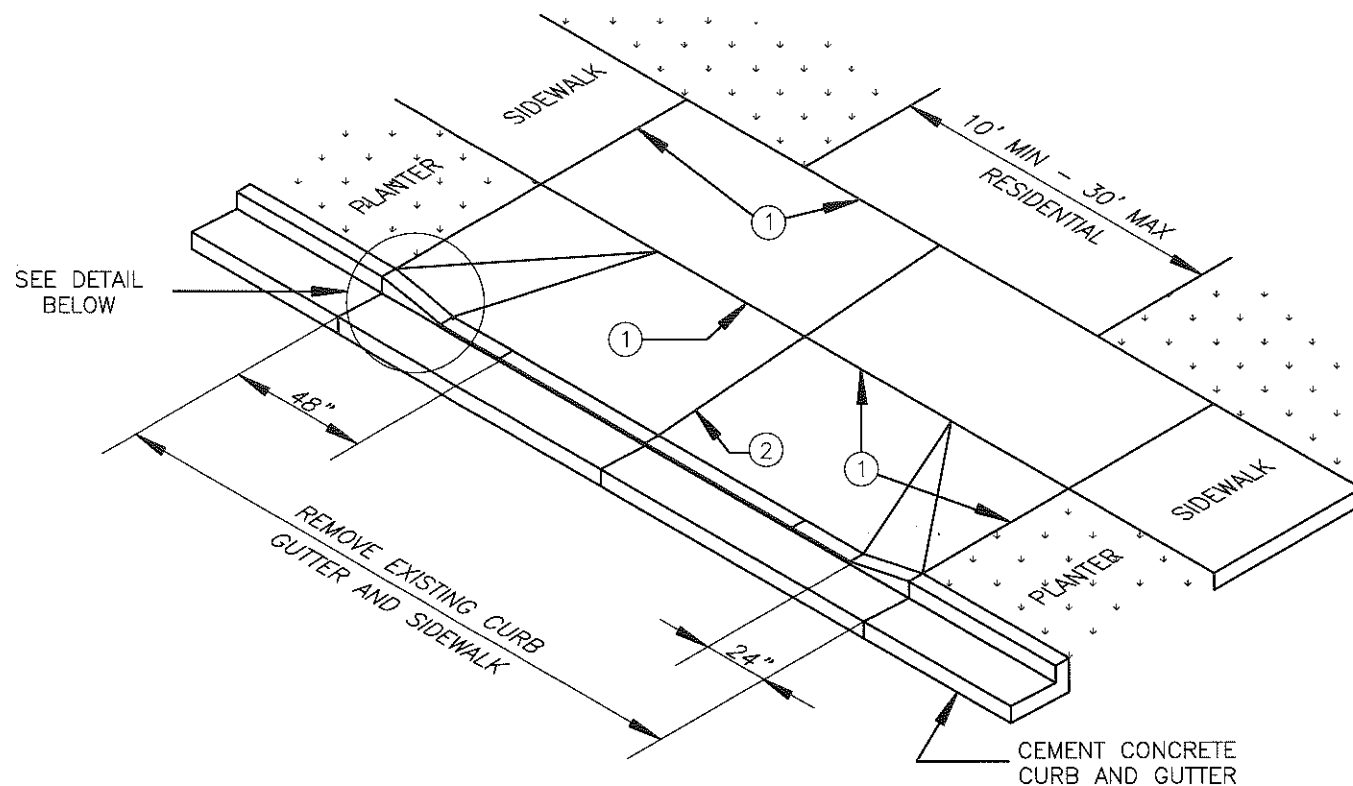
ACCESS POINT TYPES, RADII AND WIDTHS

APPROVED BY:

Steve Harmon 10-1-04

COUNTY ROAD ENGINEER

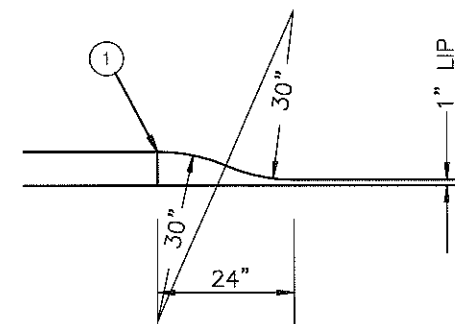
DATE



NOTES:

1. FULL DEPTH EXPANSION JOINT, 3/8" MINIMUM THICKNESS.
2. FULL DEPTH EXPANSION JOINT, 3/8" MINIMUM THICKNESS IF WIDTH OF DRIVEWAY IS 15 FEET OR GREATER.
3. DRIVEWAY SECTION WITHIN PUBLIC RIGHT-OF-WAY IS TO BE SURFACED WITH ASPHALT OR CONCRETE.
4. DRIVEWAY CEMENT CONCRETE DEPTH SHALL BE A MINIMUM OF 6" AND PLACED ON COMPACTED GRADE.
5. CONCRETE SHALL BE COMMERCIAL CLASS CONCRETE PER WSDOT/APWA SPECIFICATIONS.
6. CLEAN AND EDGE ALL JOINTS.
7. SEE STD DWG 2-010 TO DETERMINE WHEN THIS DRIVEWAY MAY BE USED.

SEE TEXT SECTION 2-03



DROP CURB TRANSITION DETAIL



SNOHOMISH COUNTY PUBLIC WORKS

2-020

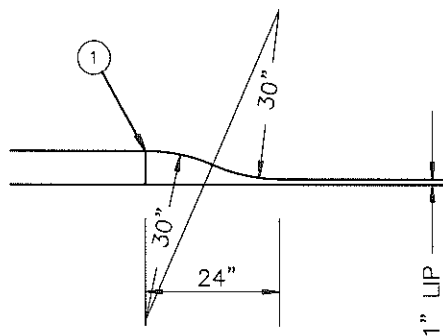
DROP CURB DRIVEWAY - RESIDENTIAL

APPROVED BY:

Steve E. Thompson 10-1-04

COUNTY ROAD ENGINEER

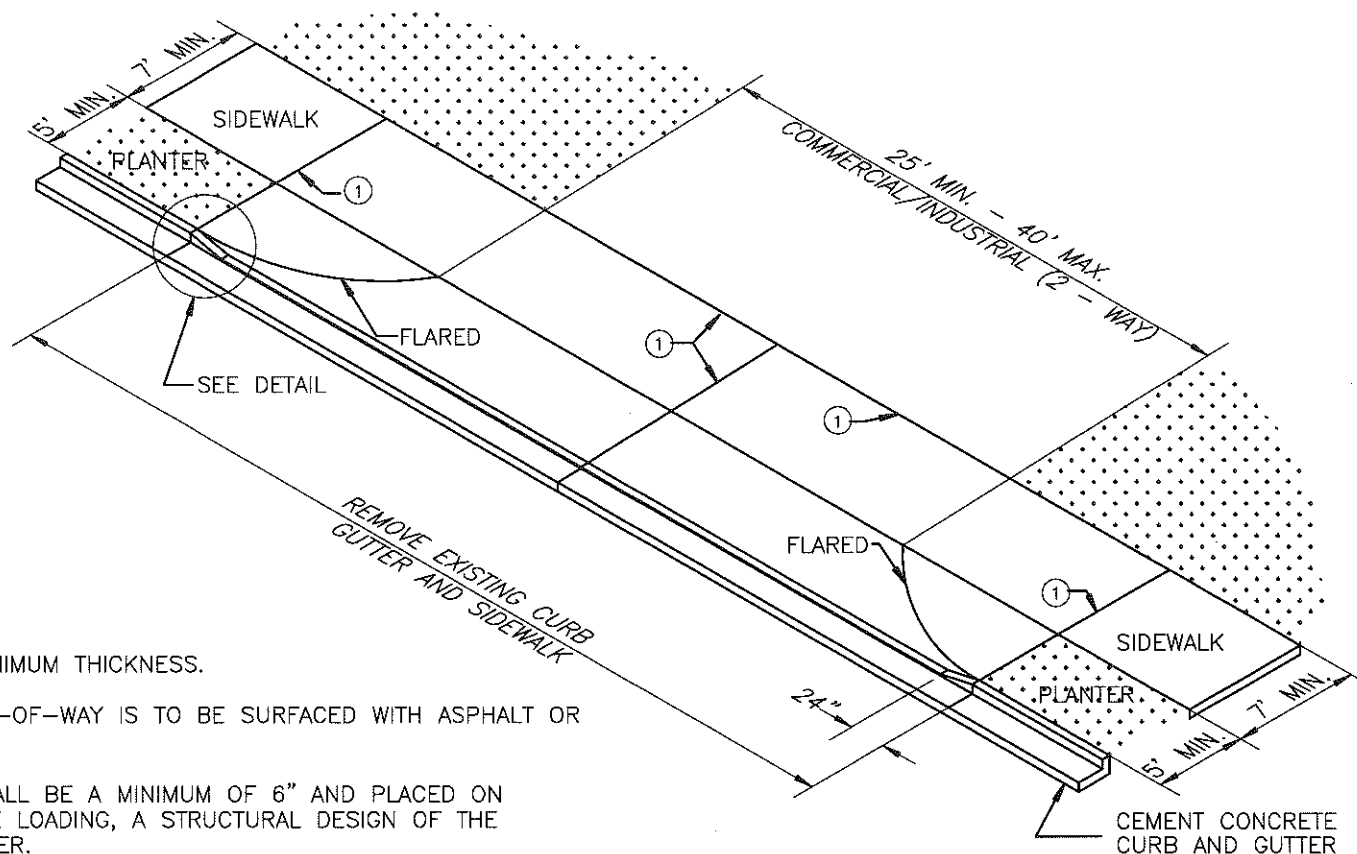
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**DROP CURB
TRANSITION DETAIL**

NOTES:

1. FULL DEPTH EXPANSION JOINT, 3/8" MINIMUM THICKNESS.
2. DRIVEWAY SECTION WITHIN PUBLIC RIGHT-OF-WAY IS TO BE SURFACED WITH ASPHALT OR CONCRETE.
3. DRIVEWAY CEMENT CONCRETE DEPTH SHALL BE A MINIMUM OF 6" AND PLACED ON COMPACTED GRADE. DEPENDING ON VEHICLE LOADING, A STRUCTURAL DESIGN OF THE DRIVEWAY MAY BE REQUIRED BY THE ENGINEER.
4. CONCRETE SHALL BE COMMERCIAL CLASS CONCRETE PER WSDOT/APWA SPECIFICATIONS.
5. CLEAN AND EDGE ALL JOINTS.
6. COMMERCIAL AND INDUSTRIAL ACCESS WIDTHS SHOWN ARE FOR TWO-WAY ACCESS ONTO NON-ARTERIALS. MINIMUM WIDTH FOR ACCESS ONTO ARTERIALS IS 35 FEET. SEE TEXT SECTION 2-03 FOR ONE-WAY WIDTHS.
7. SEE STD DWG 2-010 TO DETERMINE WHEN THIS DRIVEWAY MAY BE USED.



SNOHOMISH COUNTY PUBLIC WORKS

2-025

DROP CURB DRIVEWAY - COMMERCIAL/INDUSTRIAL

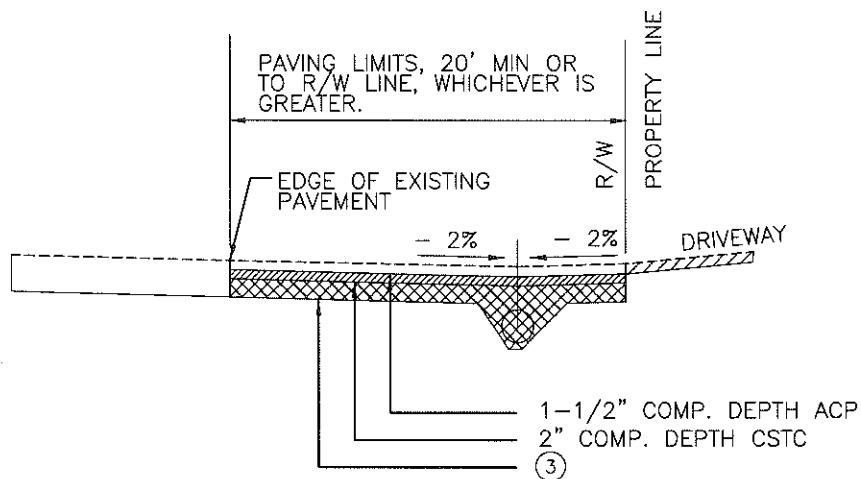
APPROVED BY:

Steve E. Warmen

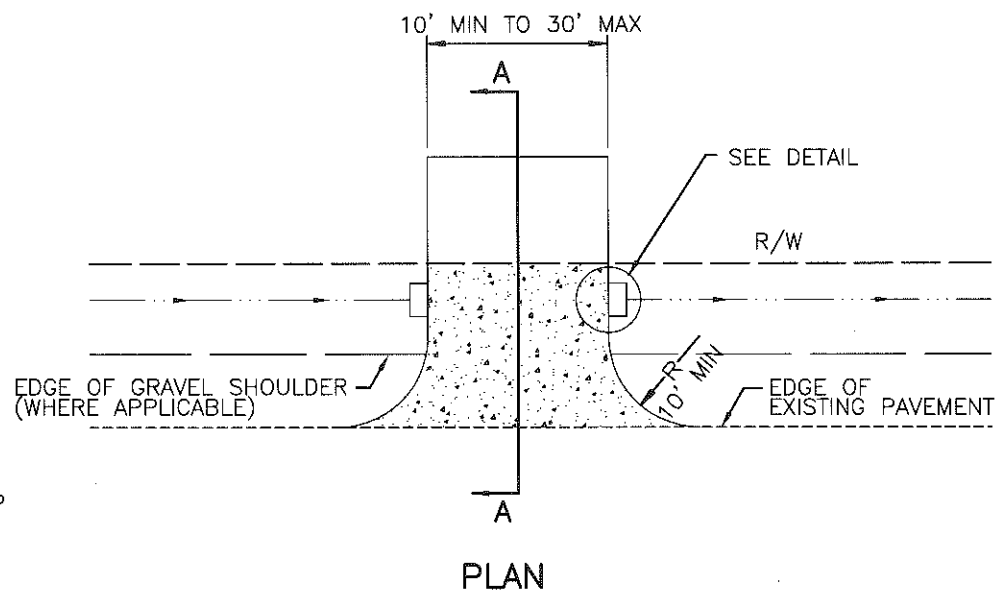
COUNTY ROAD ENGINEER

10-1-04

DATE



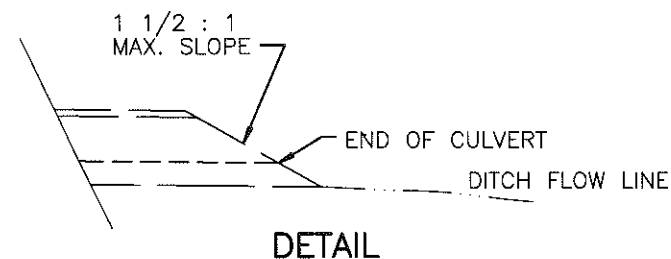
SECTION A-A



NOTES:

1. FOR ACCESSING ONE OR TWO RESIDENTIAL DWELLING UNITS (ONE DUPLEX OR TWO SINGLE FAMILY RESIDENCES).
2. ALL SURFACE DRAINAGE FROM THE DRIVEWAY MUST BE CONTAINED AND DIRECTED FROM THE DRIVEWAY TO THE OPEN DITCH. NO SURFACE DRAINAGE SHALL FLOW ONTO THE COUNTY ROAD.
3. SUBGRADE SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTION 2-03.3(14)C OF THE WSDOT/APWA SPECIFICATIONS (METHOD B). SURFACING MATERIALS SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY (MODIFIED PROCTOR).
4. CULVERT PIPE SHALL BE SIZED TO ACCOMMODATE DITCH FLOWS BUT IN NO CASE BE SMALLER THAN 12 INCHES.
5. COVER DEPTHS LESS THAN 12 INCHES REQUIRE APPROVAL BY THE ENGINEER.
6. A DRIVEWAY CULVERT HEADWALL, SUBJECT TO APPROVAL BY THE ENGINEER, MAY BE USED IN LIEU OF THE 1 1/2: 1 SIDESLOPE.

SEE TEXT SECTION 2-03



SNOHOMISH COUNTY PUBLIC WORKS

2-030

RESIDENTIAL DRIVEWAY APPROACH - ASPHALT

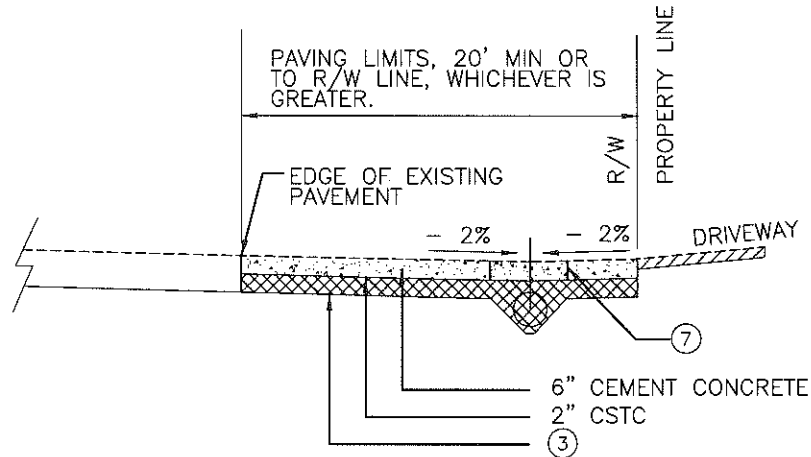
APPROVED BY:

Stewart E. Norman

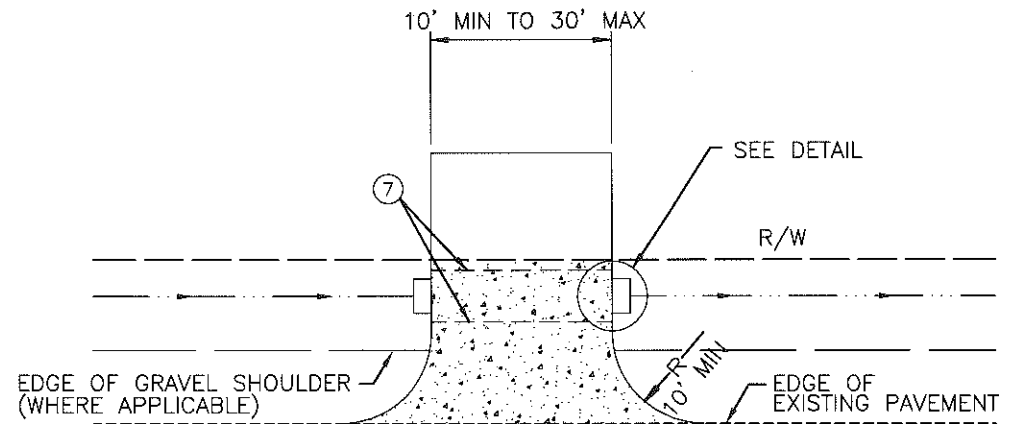
COUNTY ROAD ENGINEER

10-1-04

DATE



SECTION

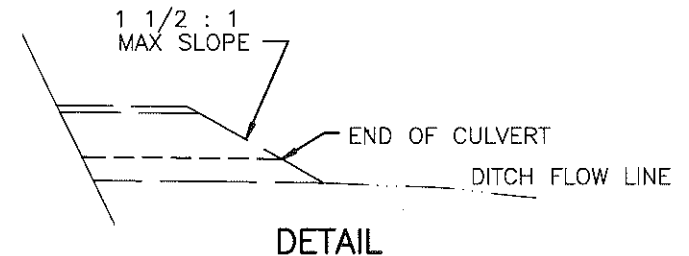


PLAN

NOTES:

1. FOR ACCESSING ONE OR TWO RESIDENTIAL DWELLING UNITS (ONE DUPLEX OR TWO SINGLE FAMILY RESIDENCES).
2. ALL SURFACE DRAINAGE FROM THE DRIVEWAY MUST BE CONTAINED AND DIRECTED FROM THE DRIVEWAY TO THE OPEN DITCH. NO SURFACE DRAINAGE SHALL FLOW ONTO THE COUNTY ROAD.
3. SUBGRADE SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTION 2-03.3(14)C OF THE WSDOT/APWA SPECIFICATIONS (METHOD B). SURFACING MATERIALS SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY (MODIFIED PROCTOR).
4. CULVERT PIPE SHALL BE SIZED TO ACCOMMODATE DITCH FLOWS BUT IN NO CASE BE SMALLER THAN 12 INCHES.
5. COVER DEPTHS LESS THAN 12 INCHES REQUIRE APPROVAL BY THE ENGINEER.
6. A DRIVEWAY CULVERT HEADWALL, SUBJECT TO APPROVAL BY THE ENGINEER, MAY BE USED IN LIEU OF THE 1 1/2 : 1 SIDESLOPE.
7. EXPANSION JOINT REQUIRED AT A DISTANCE OF 1 1/2 TIMES THE PIPE DIAMETER FROM PIPE CENTERLINE. MATERIAL MAY BE CEDAR 2"x6" OR 3/8" MIN. X FULL DEPTH PREMOLDED JOINT MATERIAL.
8. PAVEMENT/DRIVEWAY INTERFACE MUST BE A CLEAN STRAIGHT SURFACE WITH A 3/8" MIN. X FULL DEPTH EXPANSION JOINT. 3/8" MIN. THICKNESS OF PREMOLDED JOINT MATERIAL REQUIRED. (NO CEDAR).

SEE TEXT SECTION 2-03



DETAIL



SNOHOMISH COUNTY PUBLIC WORKS

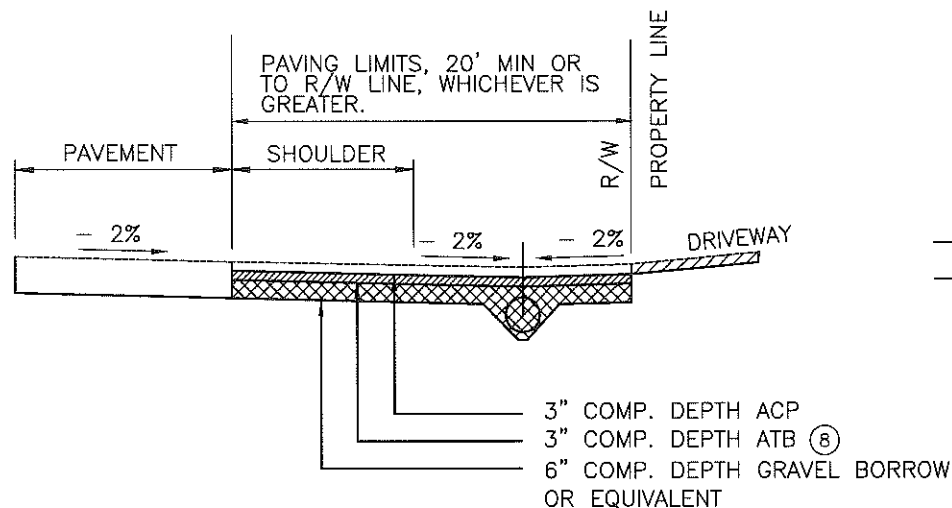
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RESIDENTIAL DRIVEWAY APPROACH - CONCRETE

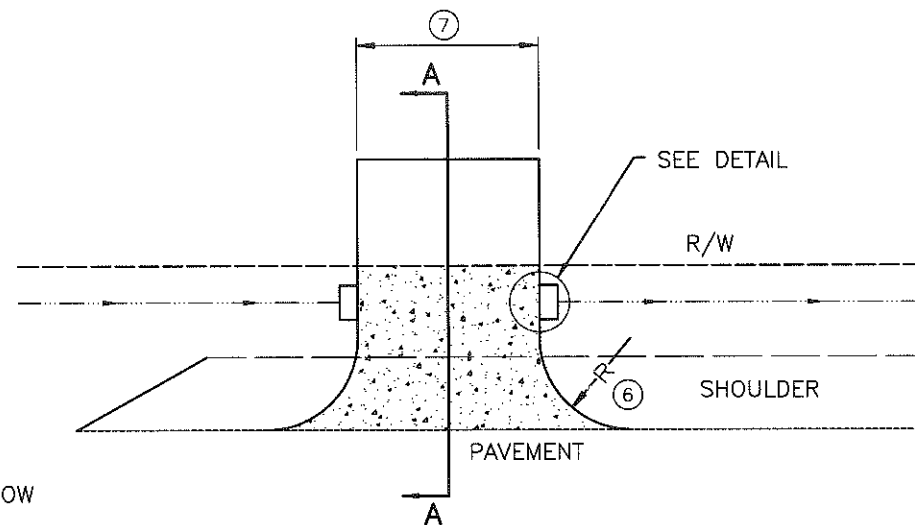
APPROVED BY:

Steven E. Morrison
COUNTY ROAD ENGINEER

10-1-04
DATE



SECTION A-A

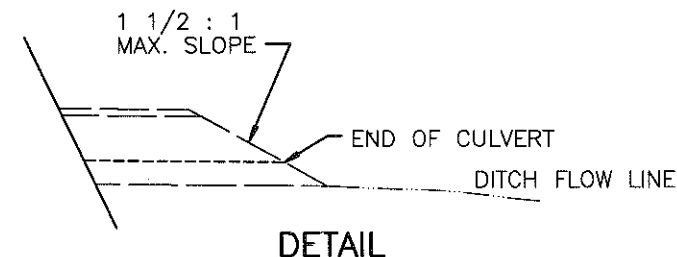


PLAN

NOTES:

1. ALL SURFACE DRAINAGE FROM THE DRIVEWAY MUST BE CONTAINED AND DIRECTED FROM THE DRIVEWAY TO THE OPEN DITCH. NO SURFACE DRAINAGE SHALL FLOW ONTO THE COUNTY ROAD.
2. SUBGRADE SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTION 2-03.3(14)C OF THE WSDOT/APWA SPECIFICATIONS (METHOD B). SURFACING MATERIALS SHALL BE COMPACTED TO 95% MAXIMUM DENSITY (MODIFIED PROCTOR).
3. CULVERT PIPE SHALL BE 12 INCHES MINIMUM DIAMETER AND LARGER IF DRAINAGE REQUIRES.
4. COVER DEPTHS LESS THAN 12" REQUIRE REINFORCED CONCRETE CULVERT PIPE AND APPROVAL BY THE ENGINEER.
5. A DRIVEWAY CULVERT HEADWALL, SUBJECT TO APPROVAL BY THE ENGINEER, MAY BE USED IN LIEU OF THE 1 1/2 : 1 SIDESLOPE.
6. SEE STANDARD DRAWING 2-010 FOR RADII.
7. MAXIMUM WIDTH: 40'. MINIMUM WIDTH SEE SECTION 2-03.
8. ADDITIONAL PAVEMENT THICKNESS MAY BE REQUIRED FOR HEAVY TRUCK TRAFFIC.

SEE TEXT SECTION 2-03



DETAIL

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SNOHOMISH COUNTY PUBLIC WORKS

2-040

COMMERCIAL/INDUSTRIAL APPROACH-ASPHALT

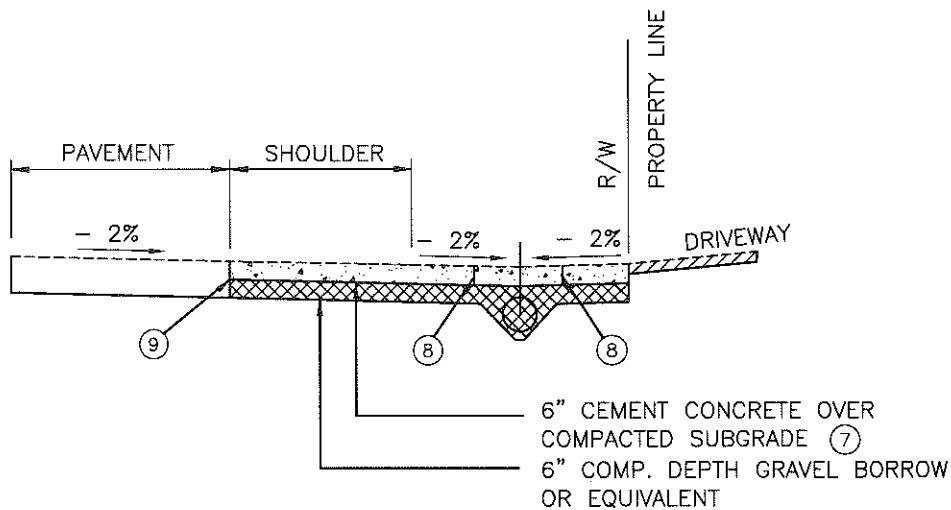
APPROVED BY:

Stewart E. Morrison

COUNTY ROAD ENGINEER

2-25-03

DATE

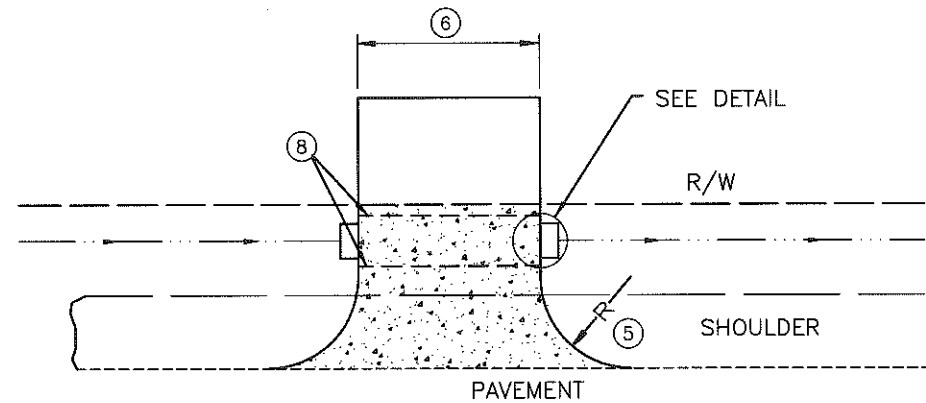


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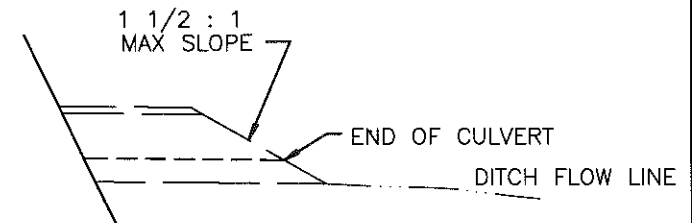
NOTES:

1. ALL SURFACE DRAINAGE FROM THE DRIVEWAY MUST BE CONTAINED AND DIRECTED FROM THE DRIVEWAY TO THE OPEN DITCH. NO SURFACE DRAINAGE SHALL FLOW ONTO THE COUNTY ROAD.
2. CULVERT PIPE SHALL BE 12 INCHES MINIMUM DIAMETER AND LARGER IF DRAINAGE REQUIRES.
3. COVER DEPTHS LESS THAN 12 INCHES REQUIRE REINFORCED CONCRETE CULVERT PIPE AND APPROVAL BY THE ENGINEER.
4. A DRIVEWAY CULVERT HEADWALL, SUBJECT TO APPROVAL BY THE ENGINEER, MAY BE USED IN LIEU OF THE 1 1/2 : 1 SIDESLOPE.
5. SEE STANDARD DRAWING 2-010 FOR RADII.
6. MAXIMUM ACCESS POINT WIDTH: 40'. MINIMUM WIDTH SEE SECTION 2-03.
7. ADDITIONAL PAVEMENT THICKNESS MAY BE REQUIRED FOR HEAVY TRUCK TRAFFIC.
8. EXPANSION JOINT REQUIRED AT A DISTANCE OF 1 1/2 TIMES THE PIPE DIAMETER FROM PIPE CENTERLINE. MATERIAL MAY BE CEDAR 2"x6" OR 3/8" MIN. X FULL DEPTH PREMOLDED JOINT MATERIAL.
9. PAVEMENT/DRIVEWAY INTERFACE MUST BE A CLEAN STRAIGHT SURFACE WITH A 3/8" MIN. X FULL DEPTH EXPANSION JOINT. 3/8" MIN THICKNESS OF PREMOLDED JOINT MATERIAL REQUIRED. (NO CEDAR).

SEE TEXT SECTION 2-03



PLAN



DETAIL

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SNOHOMISH COUNTY PUBLIC WORKS

2-045

COMMERCIAL/INDUSTRIAL APPROACH - CONCRETE

APPROVED BY:

Steven E. Morrison

COUNTY ROAD ENGINEER

2-25-03

DATE

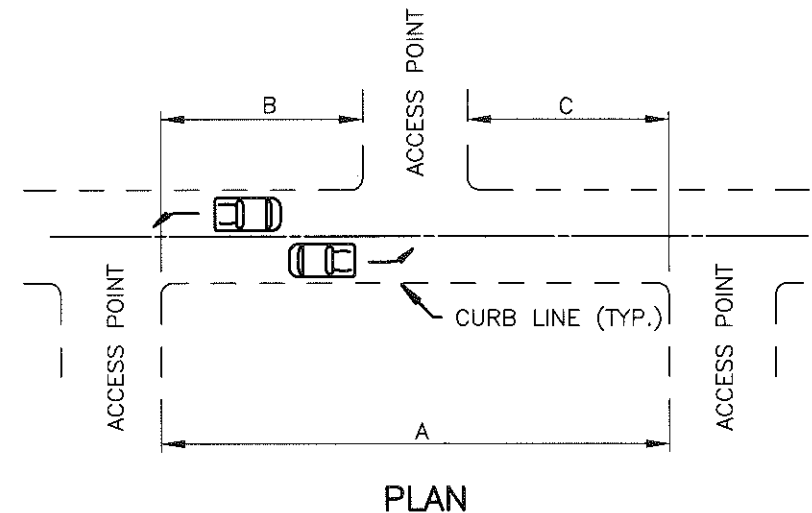
MINIMUM ACCESS POINT SPACING – COMMERCIAL/INDUSTRIAL (FEET) ① ⑥

ROADWAY SPEED (MPH) ②	DIMENSION A		DIMENSION B ⑤		DIMENSION C ⑤	
	ARTERIALS ③	NON-ARTERIALS ④	ARTERIALS	NON-ARTERIALS	ARTERIALS	NON-ARTERIALS
25	105	35	105	75	105	35
30	125	40	125	75	125	40
35	150	45	150	75	150	45
40	185	50	185	75	185	50
45	230	50	230	75	230	50
50	275	50	275	75	275	50

NOTES:

1. ACCESS POINT SPACING ONLY. FOR PUBLIC STREET SPACING, SEE TEXT SECTION 3-09.
2. REFERS TO POSTED SPEED OR OPERATING SPEED, WHICHEVER IS GREATER.
3. BETWEEN THE NEAREST EDGES OF TWO-WAY ACCESS POINTS. DISTANCES BETWEEN ADJACENT, ONE-WAY ACCESS POINTS (WITH THE INBOUND ACCESS UPSTREAM) CAN BE ONE-HALF THE DISTANCES SHOWN ABOVE.
4. BETWEEN THE NEAREST EDGES OF ONE OR TWO-WAY ACCESS POINTS.
5. ACCESS POINTS DIRECTLY OPPOSITE FROM EACH OTHER ARE MOST DESIRABLE. WHERE THIS IS NOT POSSIBLE, THESE DIMENSIONS WILL APPLY.
6. WHERE ACCESS POINTS ARE TO BE SIGNALIZED, A MINIMUM SPACING OF 1200 FEET TO ANY OTHER SIGNALIZED INTERSECTION SHOULD BE MAINTAINED. IF THE SIGNALIZED ACCESS POINTS FORM A "T" INTERSECTION WITH LITTLE POSSIBILITY OF ANY FUTURE ACCESS POINT ACROSS THE STREET, A MINIMUM SPACING OF 600 FEET FROM THE NEAREST SIGNALIZED INTERSECTION MAY BE ACCEPTABLE.
7. IN CASES WHERE ACCESS POINT SPACING IS NOT ATTAINABLE BECAUSE EXISTING FRONTAGES ARE NARROW, ACCESS POINTS SHOULD BE LOCATED AS CLOSE TO THE TABULATED VALUES SHOWN ABOVE AS POSSIBLE. WHEN THIS OCCURS, THE ENGINEER MAY REQUIRE ANALYSIS TO DETERMINE IF LEFT TURNS SHOULD BE PROHIBITED INTO OR OUT OF THE ACCESS POINT.

SEE TEXT SECTION 2-04



SNOHOMISH COUNTY PUBLIC WORKS

2-050

COMMERCIAL/INDUSTRIAL ACCESS POINT SPACING

APPROVED BY:

Steve E. Hornsby 2-7-03

COUNTY ROAD ENGINEER

DATE

D.L.D.: 3/15/00

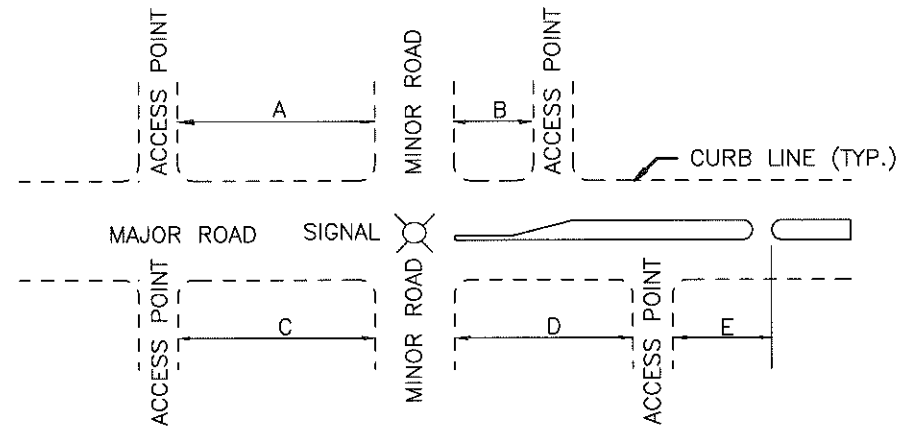
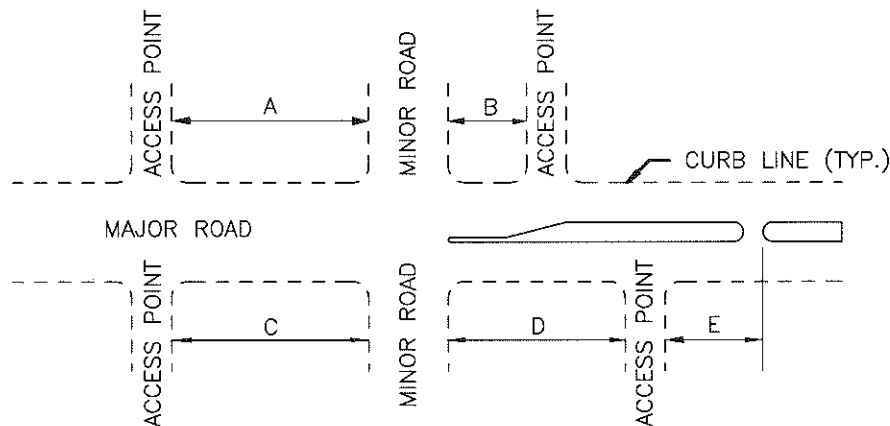
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MINIMUM CORNER CLEARANCES FOR STOP SIGN INTERSECTION CONTROL (IN FEET)

DIM.	ARTERIALS						NON-ARTERIALS
	ARTERIAL POSTED SPEED						ALL SPEEDS
	30	35	40	45	50	55	
A	115	135	160	180	205	230	50
B	85	105	120	140	155	170	50
C	115	135	160	180	205	230	50
D	115	135	160	180	205	230	50
E	115 OR 0	135 OR 0	160 OR 0	180 OR 0	205 OR 0	230 OR 0	0

MINIMUM CORNER CLEARANCES FOR SIGNALIZED INTERSECTION CONTROL (IN FEET)

DIM.	ARTERIALS						NON-ARTERIALS
	ARTERIAL POSTED SPEED						ALL SPEEDS
	30	35	40	45	50	55	
A	230	275	320	365	410	460	50
B	115	135	160	180	205	230	50
C	230	275	320	365	410	460	50
D	230	275	320	365	410	460	50
E	115 OR 0	135 OR 0	160 OR 0	180 OR 0	205 OR 0	230 OR 0	0



NOTES:

1. IN CASES WHERE CORNER CLEARANCES ARE NOT ATTAINABLE BECAUSE FRONTAGES ARE NARROW, ACCESS POINTS SHOULD BE LOCATED AS CLOSE AS PRACTICABLE TO THE PROPERTY LINE MOST DISTANT FROM THE INTERSECTION. THE ENGINEER MAY REQUIRE ANALYSIS OF SUCH LOCATIONS TO DETERMINE IF LEFT TURNS SHOULD BE PROHIBITED INTO OR OUT OF THE ACCESS POINT.
2. ACCESS POINTS NEAR STOP OR SIGNAL CONTROLLED INTERSECTIONS SHALL BE ANALYZED TO DETERMINE WHETHER STOPPING QUEUES WILL BLOCK THE ACCESS POINT.

SEE TEXT SECTION 2-05

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SNOHOMISH COUNTY PUBLIC WORKS
2-060 COMMERCIAL/INDUSTRIAL CORNER CLEARANCES

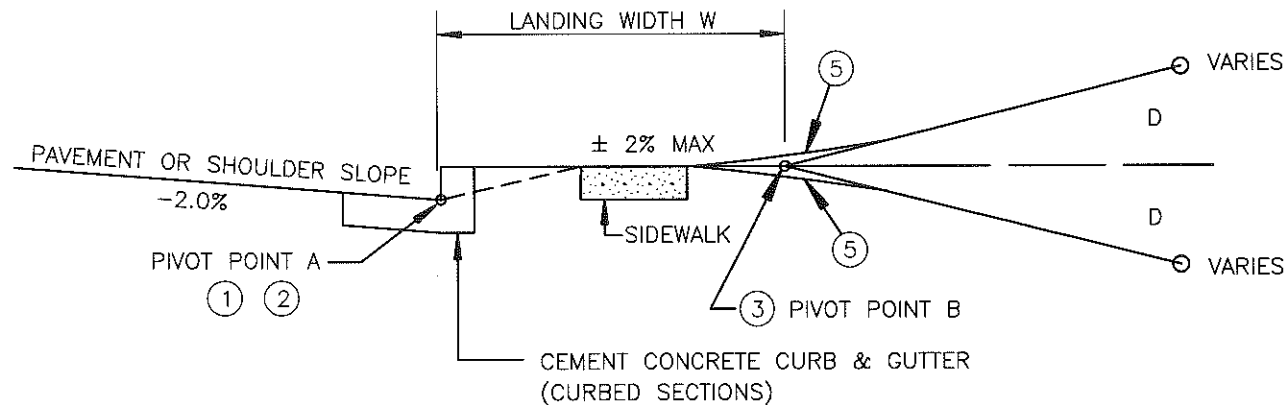
APPROVED BY:

Stewart E. Mermel

2-7-03

COUNTY ROAD ENGINEER

DATE



NOTES:

- SEE STD DWG 4-140 FOR CURB DETAILS.
- WHEN ACCESSING SHOULDERED ROADWAYS, MAINTAIN SHOULDER SLOPE TO PIVOT POINT A.
- ACCESS POINT GRADE SHALL BE MEASURED FROM PIVOT POINT B.
- LANDING WIDTH W MAY BE REDUCED SUBJECT TO APPROVAL OF THE ENGINEER IN ACCORDANCE WITH SECTION 1-05 OF THESE STANDARDS.
- A VERTICAL CURVE SHALL BE CONSTRUCTED TO TRANSITION THE LANDING TO THE ACCESS APPROACH. THE VERTICAL SEPARATION BETWEEN THE CURVE AND A 10-FOOT CHORD OF THE CURVE SHALL NOT EXCEED 3.25 INCHES (WHERE D IS POSITIVE) OR 2.00 INCHES (WHERE D IS NEGATIVE).
- GRADE ACROSS RURAL LANDING MAY BE $\pm 5\%$.

SEE TEXT SECTION 2-07

TYPE OF ACCESS ACCESSING LANDING WIDTH W^④ ACCESS GRADE D

RESIDENTIAL (URBAN)	NON-ARTERIAL	15'	\pm 15% MAX.
RESIDENTIAL (URBAN)	ARTERIAL	15'	\pm 7% MAX.
RESIDENTIAL (RURAL)	ALL	5' ⑥	\pm 15% MAX.
COMMERCIAL/INDUSTRIAL	NON-ARTERIAL	30'	\pm 8% MAX.
COMMERCIAL/INDUSTRIAL	ARTERIAL	30'	\pm 5% MAX.

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2-070

SNOHOMISH COUNTY PUBLIC WORKS

ACCESS POINT GRADES

APPROVED BY:

Steve Elmore

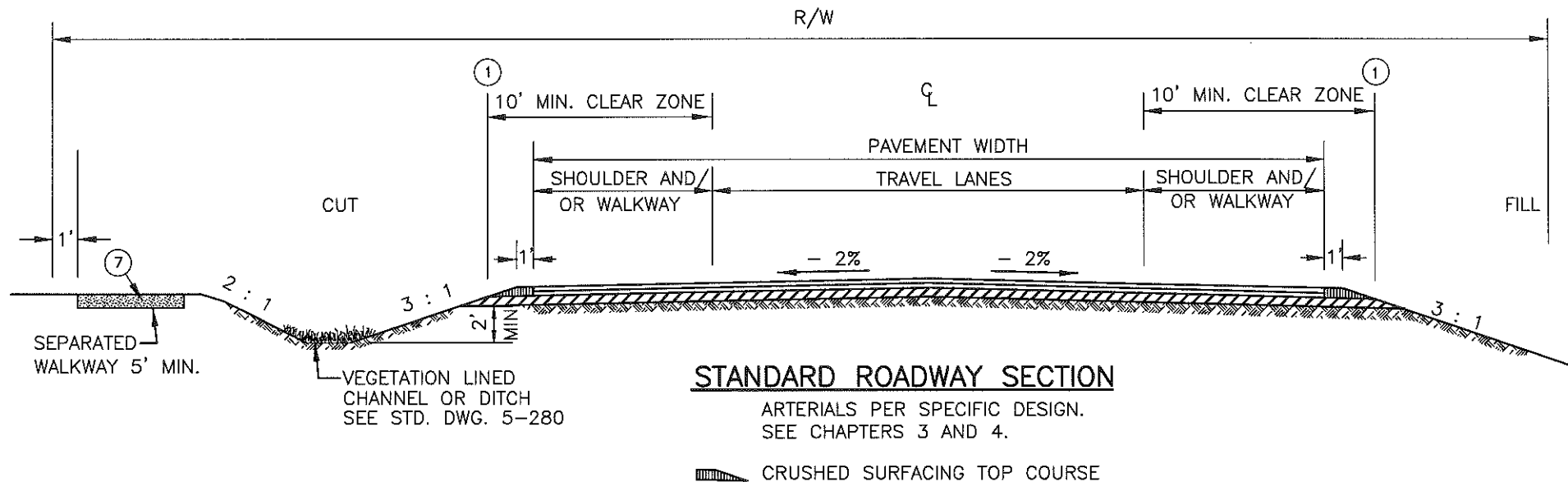
2-25-03

COUNTY ROAD ENGINEER

DATE

CHAPTER 3 DRAWING INDEX

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3-020	Typical Arterial Road - Urban Areas
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3-030B	Road Standards - Arterials
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3-050	Typical Non-Arterial Road - Urban Areas
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3-150	Road Ends
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NOTES:

1. CLEAR ZONE DISTANCES SHOWN APPLY TO ROADS WITH A POSTED SPEED OF 35 MPH OR LESS. CLEAR ZONE DISTANCES FOR ROADS POSTED AT GREATER THAN 35 MPH SHOULD BE DETERMINED ACCORDING TO CHAPTER 7 OF THE WSDOT DESIGN MANUAL.
2. R/W, PAVEMENT, AND SHOULDER WIDTHS VARY. SEE STANDARD DRAWING 3-030B. CROSS-SECTION MAY BE ALTERED WHERE A STREAM OR WETLAND BORDERS THE ROAD.
3. SEE STANDARD DRAWING 8-010 FOR PLACEMENT OF UTILITIES.
4. WHERE BICYCLE LANES ARE REQUIRED ON ARTERIALS, PAVEMENT WIDTH AND R/W WIDTH SHALL BE INCREASED TO ACCOMMODATE THE BICYCLE LANES.
5. R/W WIDTH MAY BE REDUCED WHERE THE ENGINEER HAS DETERMINED THAT ADEQUATE PROVISIONS HAVE BEEN MADE FOR WALKWAYS, BIKEWAYS, SWALES OR OTHER FEATURES OUTSIDE THE R/W.
6. IN FILL SECTIONS AND AROUND CUL-DE-SACS, THE ENGINEER MAY REQUIRE A THICKENED EDGE TO CONTROL DRAINAGE. SEE STANDARD DRAWING 4-145.
7. PREFERRED WALKWAY LOCATION WHERE R/W PERMITS. WHEN PLACED IN THIS LOCATION, A WIDENED SHOULDER FOR A WALKWAY WILL NOT BE REQUIRED. SEE TEXT TABLE 4-1 FOR SURFACING REQUIREMENTS.

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SNOHOMISH COUNTY PUBLIC WORKS

3-010

TYPICAL ARTERIAL ROAD - RURAL AREAS

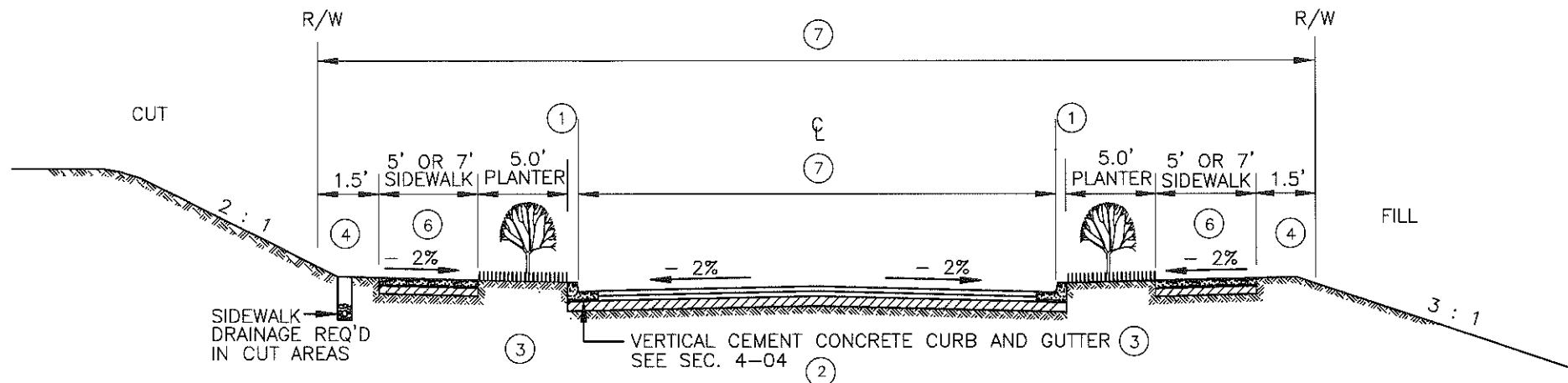
APPROVED BY:

Steven E. Norman

COUNTY ROAD ENGINEER

4-17-03

DATE



STANDARD ROADWAY SECTION

ARTERIALS PER SPECIFIC DESIGN. SEE CHAPTERS 3 AND 4.

NOTES:

1. URBAN CLEAR ZONE DISTANCE SHALL BE 2 FT. BEYOND THE FACE OF CURB FOR ROADS WITH A POSTED SPEED OF 35 MPH OR LESS. CLEAR ZONE DISTANCES FOR ROADS POSTED AT GREATER THAN 35 MPH SHOULD BE DETERMINED ACCORDING TO CHAPTER 7 OF THE WSDOT DESIGN MANUAL.
2. SEE STANDARD DRAWING 8-020 FOR PLACEMENT OF UTILITIES.
3. REFER TO SECTION 4-01 FOR LANDSCAPING REQUIREMENTS. ALL LANDSCAPING WITHIN THE RIGHT OF WAY IS SUBJECT TO APPROVAL BY DPW.
4. THE R/W LINE SHALL BE AT LEAST 1.5 FEET BEHIND THE BACK OF SIDEWALK.
5. CROSS-SECTION MAY BE ALTERED WHERE A STREAM OR WETLAND BORDERS THE ROAD.
6. REFER TO TEXT SECTION 4-05 FOR SIDEWALK WIDTH REQUIREMENTS.
7. SEE STANDARD DRAWING 3-030B FOR WIDTH REQUIREMENTS.

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SNOHOMISH COUNTY PUBLIC WORKS

3-020

TYPICAL ARTERIAL ROAD-URBAN AREAS

APPROVED BY:

Steve E. Morrow

5-29-03

COUNTY ROAD ENGINEER

DATE

ROAD STANDARDS – ARTERIALS

RURAL AREA STANDARDS ARE TO BE USED IN DESIGNING ROADS UTILIZING SHOULDERS AND OPEN DRAINAGE. THESE STANDARDS WILL GENERALLY BE REQUIRED IN RURAL AREAS AS DESIGNATED IN SNOHOMISH COUNTY'S COMPREHENSIVE PLANS. HOWEVER, THESE STANDARDS MAY ALSO BE ALLOWED FOR THOSE ROADS LYING INSIDE THE URBAN AREA BOUNDARY WHERE ZONING REQUIRES RESIDENTIAL LOT SIZES OF APPROXIMATELY ONE-HALF ACRE OR MORE AND CHARACTERIZED BY LARGE AREAS OF FARMLAND OR NATURAL AND UNDEVELOPED LANDS.

URBAN AREA STANDARDS ARE TO BE USED IN DESIGNING STREETS UTILIZING CURB AND GUTTER SECTIONS, SIDEWALKS AND ENCLOSED DRAINAGE. THESE STANDARDS WILL GENERALLY BE REQUIRED IN AREAS OF SUBURBAN OR HIGHER DENSITIES AS DESIGNATED IN SNOHOMISH COUNTY'S COMPREHENSIVE PLANS. HOWEVER, THESE STANDARDS MAY ALSO BE REQUIRED FOR THOSE ROADS IN RURAL AREAS WHERE ZONING PERMITS RESIDENTIAL LOT SIZES OF APPROXIMATELY ONE-THIRD ACRE OR LESS, COMMERCIAL OR INDUSTRIAL DEVELOPMENT, OR OTHER INTENSIVE LAND USES.

NOTES:

1. PAVEMENT WIDTH FOR RURAL ARTERIALS IS MEASURED FROM OUTSIDE EDGE OF SHOULDER TO OUTSIDE EDGE OF SHOULDER. URBAN ARTERIALS ARE MEASURED FROM FACE OF CURB TO FACE OF CURB. WIDTH VARIES DEPENDING ON WHETHER BICYCLE LANES OR WIDENED EXTERIOR LANES ARE CONSTRUCTED. SEE TEXT SECTION 4-08.
2. SHOULDER WIDTHS VARY. SEE TEXT SECTION 4-06.
3. DESIGNATED WALKWAYS SHALL BE DELINEATED IN ACCORDANCE WITH STANDARD DRAWING 4-160.
4. ALL PAVED SHOULDERS AND NON-SEPARATED WALKWAYS SHALL BE CONSTRUCTED TO THE SAME PAVEMENT SECTION AS REQUIRED FOR TRAVEL LANES.
5. BOULEVARDS (I.E., STREETS WITH MEDIANS) SHALL BE CONSTRUCTED WITH A MINIMUM OF 20 FEET OF CLEAR PAVEMENT ON EACH SIDE OF THE MEDIAN. IF PARKING IS ALLOWED, A MINIMUM OF 28 FEET SHALL BE CONSTRUCTED ON EACH SIDE OF THE MEDIAN TO ALLOW FOR 20 FEET OF CLEAR PAVEMENT PLUS 8 FEET OF PARKING.
6. ROADS IN COMMERCIAL/INDUSTRIAL AREAS SERVING SIGNIFICANT VOLUMES OF TRUCK TRAFFIC MAY REQUIRE ADDITIONAL WIDTH AND PAVEMENT DEPTH AS DETERMINED BY THE ENGINEER BASED ON SUPPORTING DATA SUBMITTED BY THE DEVELOPER.
7. NUMBER OF LANES TO BE DETERMINED FROM THE TRANSPORTATION ELEMENT OF THE COMPREHENSIVE PLAN AND THE TRANSPORTATION NEEDS REPORT.
8. ADDITIONAL R/W WIDTH MAY BE REQUIRED TO ACCOMMODATE 7-FOOT SIDEWALKS IN COMMERCIAL/INDUSTRIAL OR MULTI-FAMILY RESIDENTIAL ZONED AREAS.
9. IF BICYCLE LANES ARE REQUIRED. SEE TEXT SECTION 4-08. MINIMUM WIDTH SHALL BE 5 FT IN A CURB ROAD SECTION AND 4 FT IN A NON-CURB ROAD SECTION.
10. IF BICYCLE LANES ARE NOT REQUIRED, THE EXTERIOR LANE WIDTH ON URBAN ROADS SHALL BE 14 FT TO PROVIDE A SHARED TRAVEL LANE.

SEE TEXT CHAPTER 3

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SNOHOMISH COUNTY PUBLIC WORKS

3-030A

ROAD STANDARDS – ARTERIALS

APPROVED BY:

Stuart Warner

COUNTY ROAD ENGINEER

5-29-03

DATE

RURAL ARTERIALS

MINIMUM WIDTH IN FEET

RURAL AREAS	R/W	PAVEMENT WIDTH ①	EXTERIOR LANE ⑩	INTERIOR LANE	SHOULDER SIDE/SIDE ②③④
MINOR COLLECTOR					
ADT < 400	70	36	11	---	7/7
ADT 400 to 2000	70	38	11	---	8/8
ADT > 2000	70	40	12	---	8/8
MAJOR COLLECTOR					
ADT < 2000	80	38	11	---	8/8
ADT > 2000 (2 Lane)	80	40	12	---	8/8
ADT > 2000 (4 Lane)	100	62	11	12	8/8

NOTE:

1. SEE STD. DRAWING
3-030A FOR NOTES.

URBAN ARTERIALS

MINIMUM WIDTH IN FEET

URBAN AREAS ⑤⑥⑦	R/W ⑧	PAVEMENT WIDTH ①	BICYCLE LANE ⑨	EXTERIOR LANE ⑩	INTERIOR LANE	LEFT TURN LANE
COLLECTOR ARTERIAL						
(2 Lanes)	70	28-34	5	12-14	--	---
(3 Lanes)	70	40-46	5	12-14	---	12
(4 Lanes)	80	50-56	5	12-14	11	---
(5 Lanes)	92	62-68	5	12-14	11	12
MINOR ARTERIAL						
(2 Lanes)	80	28-34	5	12-14	---	--
(3 Lanes)	80	40-46	5	12-14	---	12
(4 Lanes)	80	50-56	5	12-14	11	---
(5 Lanes)	92	62-68	5	12-14	11	12
PRINCIPAL ARTERIAL						
(4 Lanes)	100	52-58	5	12-14	12	--
(5 Lanes)	100	64-70	5	12-14	12	12
(6 Lanes)	106	76-82	5	12-14	12	---
(7 Lanes)	118	88-94	5	12-14	12	12

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SNOHOMISH COUNTY PUBLIC WORKS

3-030B

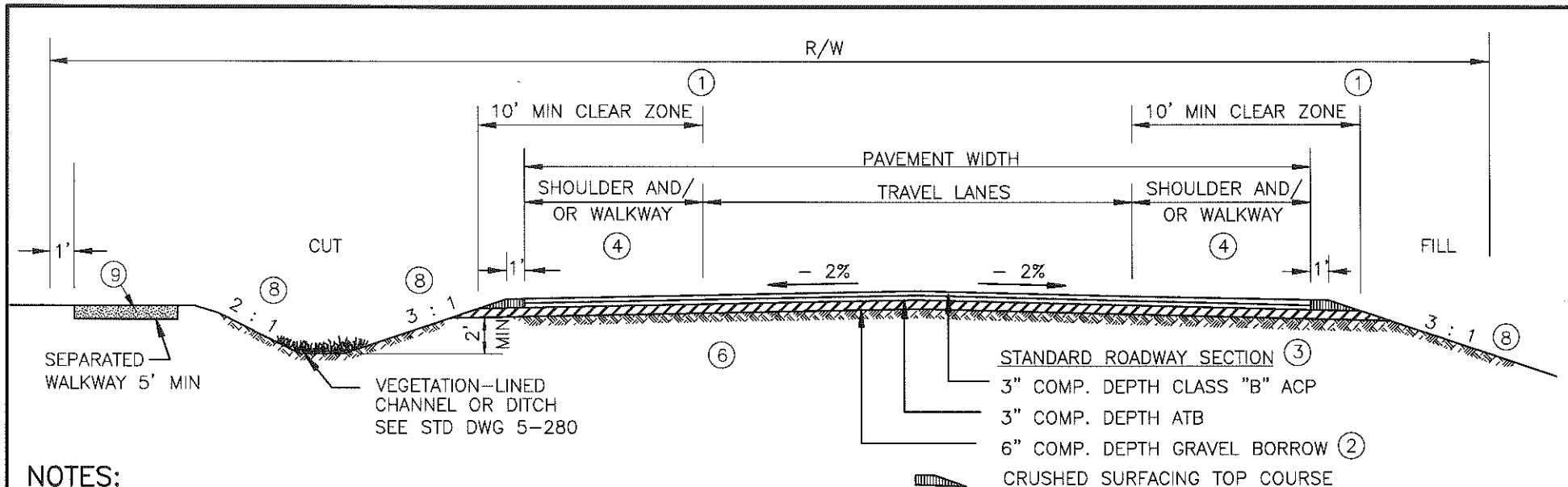
ROAD STANDARDS - ARTERIALS

APPROVED BY:

Stuart Thurman 5-29-03

COUNTY ROAD ENGINEER

DATE



NOTES:

- CLEAR ZONE DISTANCES SHOWN APPLY TO ROADS WITH A POSTED SPEED OF 35 MPH OR LESS. CLEAR ZONE DISTANCES FOR ROADS POSTED AT GREATER THAN 35 MPH SHOULD BE DETERMINED ACCORDING TO CHAPTER 7 OF THE WSDOT DESIGN MANUAL.
- AT THE ENGINEER'S DISCRETION, THE 6 INCH GRAVEL BORROW LAYER MAY BE ELIMINATED OR SUBSTITUTED WITH A LESSER THICKNESS OF GRAVEL BORROW OR EQUIVALENT MATERIAL WHEN SUBGRADE CONDITIONS WARRANT AS SUBSTANTIATED BY MATERIALS TESTING.
- CROSS-SECTION MAY BE ALTERED WHERE A STREAM OR WETLAND BORDERS THE ROAD.
- FOR ACCESS ROADS SERVING 90 ADT OR LESS AND HAVING NO POTENTIAL FOR CONNECTIVITY, A WIDENED SHOULDER FOR A WALKWAY IS NOT REQUIRED. HOWEVER, WHERE SAFE WALKING CONDITIONS FOR STUDENTS ARE IMPOSED PURSUANT TO RCW 58.17.060, 58.17.110 OR APPLICABLE COUNTY CODES, A WALKWAY WILL BE REQUIRED ON ONE SIDE OF THE ROAD.
- IN FILL SECTIONS AND AROUND CUL-DE-SACS, THE ENGINEER MAY REQUIRE A THICKENED EDGE TO CONTROL EROSION. SEE STANDARD DRAWING 4-145.
- SEE STANDARD DRAWING 8-010 FOR PLACEMENT OF UTILITIES.
- SEE STD DWGS 3-060 & 3-065 FOR NON-ARTERIAL ROAD STANDARDS. INDUSTRIAL/COMMERCIAL ROADS SERVING SIGNIFICANT VOLUMES OF TRUCK TRAFFIC MAY REQUIRE ADDITIONAL WIDTH AND PAVEMENT DEPTH AS DETERMINED BY THE ENGINEER BASED ON DATA SUBMITTED BY THE DEVELOPER.
- FOR ACCESS AND SUBCOLLECTOR ROADS, FILL SLOPES MAY BE 2:1 MAX. AND CUT SLOPES MAY BE 1-1/2:1 MAX.
- PREFERRED WALKWAY LOCATION WHERE R/W PERMITS. WHEN PLACED IN THIS LOCATION, A WIDENED SHOULDER FOR A WALKWAY WILL NOT BE REQUIRED. SEE TEXT TABLE 4-1 FOR SURFACING REQUIREMENTS.

SEE TEXT CHAPTER 3



SNOHOMISH COUNTY PUBLIC WORKS

3-040

TYPICAL NON-ARTERIAL ROAD - RURAL AREAS

APPROVED BY:

Steve C. Norman 10-1-04
COUNTY ROAD ENGINEER DATE

DATE _____

NOTES:

1. ROAD STANDARDS BASED ON "RESIDENTIAL STREETS", 2ND EDITION, PUBLISHED JOINTLY BY THE AMERICAN SOCIETY OF CIVIL ENGINEERS, THE NATIONAL ASSOCIATION OF HOME BUILDERS AND THE URBAN LAND INSTITUTE.

2. MAY BE REDUCED UPON APPROVAL OF THE ENGINEER. REFER TO SECTION 3-06.

3. FOR ACCESS ROADS SERVING 90 ADT OR LESS AND HAVING NO POTENTIAL FOR CONNECTIVITY, A WIDENED SHOULDER FOR A WALKWAY IS NOT REQUIRED. HOWEVER, WHERE SAFE WALKING CONDITIONS FOR STUDENTS ARE IMPOSED PURSUANT TO RCW 58.17.060, 58.17.110 OR APPLICABLE COUNTY CODES, A WALKWAY WILL BE REQUIRED ON ONE SIDE OF THE ROAD.

4. A 7 FT PAVED SHOULDER IS REQUIRED ON ONE SIDE IF ADT IS 250 OR GREATER, OR IF SAFE WALKING CONDITIONS FOR STUDENTS ARE IMPOSED PURSUANT TO RCW 58.17.060, 58.17.110 OR APPLICABLE COUNTY CODES.

5. EASEMENT WIDTH VARIES, BUT SHALL BE NO LESS THAN 30 FEET.

SEE TEXT CHAPTER 3

PUBLIC ROAD STANDARD – RURAL

ROAD CLASSIFICATION	DESIGN SPEED (MPH)	PAVEMENT WIDTH	TRAVEL LANES	SHOULDERS	PLANTER WIDTH	WALKWAY WIDTH	R/W WIDTH	SEE STD DRAWING
LOCAL ACCESS ROAD (ADT < 250)	25 (2)	28'	2x9' 2x9'	3'/7' 3'/3' (3)	NONE	7'(SHLDR) NONE (3)	38'-50'	3-040
RESIDENTIAL (ADT 250 -1000)	30	30'	2x10'	3'/7'	NONE	7'(SHLDR)	40'-60'	3-040
COLLECTOR ROAD (ADT 1001 - 3000)	30-35 (2)	36'	2x11'	7'/7'	NONE	7'(SHLDR)	42'-60'	3-040

PRIVATE ROAD STANDARD – RURAL

ROAD CLASSIFICATION	DESIGN SPEED (MPH)	PAVEMENT WIDTH	SURFACE	EASEMENT WIDTH	WALKWAY	SEE STD DRAWING
PRIVATE LOW VOLUME ACCESS (90 ADT OR LESS)	20	20'	GRAVEL	(5)	NONE	3-080
PRIVATE SUBCOLLECTOR (91 TO 1000 ADT)	30	20'-30'	PAVED	(5)	1x7' PAVED SHOULDER (4)	3-090



SNOHOMISH COUNTY PUBLIC WORKS

3-060

ROAD STANDARDS – NON-ARTERIALS (RURAL)

APPROVED BY:

Steve E. Harmon 10-1-04
COUNTY ROAD ENGINEER DATE

NOTES:

1. ROAD STANDARDS BASED ON "RESIDENTIAL STREETS", 2ND EDITION, PUBLISHED JOINTLY BY THE AMERICAN SOCIETY OF CIVIL ENGINEERS, THE NATIONAL ASSOCIATION OF HOME BUILDERS AND THE URBAN LAND INSTITUTE.

2. PARKING RESTRICTED TO ONE SIDE.

3. NO RESTRICTION ON PARKING.

4. MAY BE REDUCED UPON APPROVAL OF THE ENGINEER. REFER TO SECTION 3-06.

5. BICYCLE LANES MAY BE REQUIRED ON ROADS THAT ARE DESIGNATED BIKEWAY ROUTES. PAVEMENT AND R/W WIDTH SHALL BE WIDENED AS NECESSARY. SEE TEXT SECTION 4-08.

6. RIGHT OF WAY WIDTH MAY VARY. SEE TEXT SECTION 3-03B.

7. FOR RESIDENTIAL ROADS SERVING 90 ADT OR LESS AND HAVING NO POTENTIAL FOR CONNECTIVITY, SIDEWALKS AND PLANTERS ARE NOT REQUIRED. HOWEVER, WHERE SAFE WALKING CONDITIONS FOR STUDENTS ARE IMPOSED PURSUANT TO RCW 58.17.060, 58.17.110 OR APPLICABLE COUNTY CODES, A SIDEWALK ONLY WILL BE REQUIRED ON ONE SIDE OF THE ROAD

SEE TEXT CHAPTER 3

PUBLIC AND PRIVATE ROAD STANDARD – URBAN

ROAD CLASSIFICATION	DESIGN SPEED (MPH)	PAVEMENT WIDTH	TRAVEL LANES	PARKING LANE	PLANTER WIDTH	SIDEWALK WIDTH	⑤ ⑥ R/W WIDTH	SEE STD DRAWING
RESIDENTIAL (ADT 1 – 1000)	25 ④	28'	2x10'	1x8' ②	5' MIN. ⑦	5' MIN. ⑦	51'–55'	3-050
COLLECTOR (ADT 1001 – 3000)	30–35 ④	36'	2x10'	2x8' ③	5' MIN.	5' MIN.	59'–63'	3-050



SNOHOMISH COUNTY PUBLIC WORKS

3-065

ROAD STANDARDS – NON-ARTERIALS (URBAN)

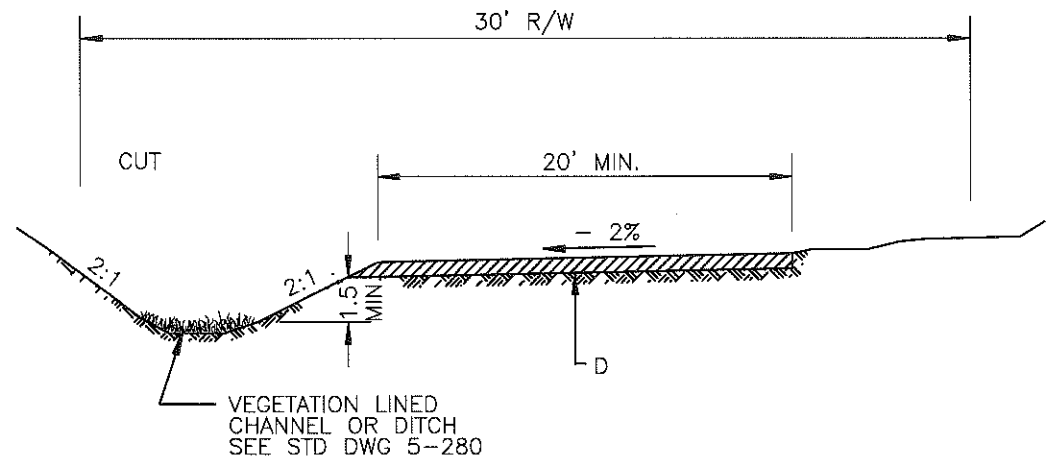
APPROVED BY:

Steven E. Hornum 10-1-04
COUNTY ROAD ENGINEER DATE

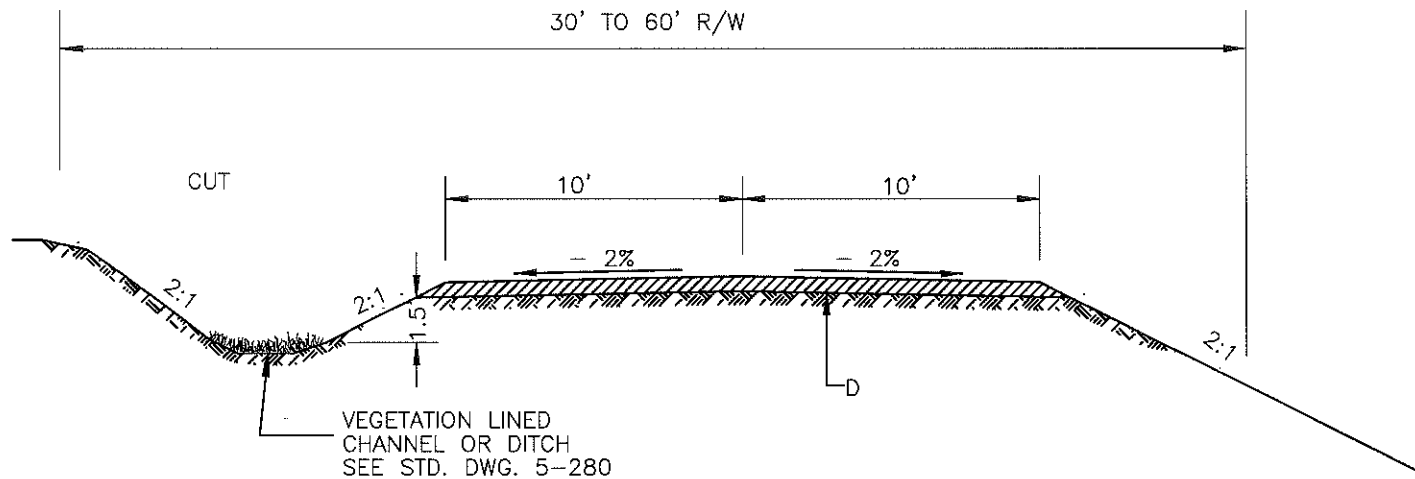
NOTES:

1. REFER TO STANDARD DRAWING 3-075 FOR SECTIONS A AND B, AND FOR SURFACING DEPTH D.

SEE TEXT SECTION 3-05



SECTION A



SECTION B

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SNOHOMISH COUNTY PUBLIC WORKS

3-070

TRAIL ACCESS PERMIT ROAD

APPROVED BY:

Steve Morrison 4-17-03

COUNTY ROAD ENGINEER

DATE

# LOTS	R/W	SECTION	
1	LESS THAN 20'		INADEQUATE R/W WIDTH
	20' - 30'	SECTION A	6" GRAVEL BORROW OR PIT-RUN GRAVEL
	31' TO 60'	SECTION B	6" GRAVEL BORROW OR PIT-RUN GRAVEL
2	LESS THAN 30'	---	INADEQUATE R/W WIDTH
	31' TO 60'	SECTION B	6" GRAVEL BORROW OR PIT-RUN GRAVEL PLUS 2 1/2" CSBC GRAVEL PLUS 1 1/2" CSTC GRAVEL AND PAVED APRON
3	LESS THAN 30'	--	INADEQUATE R/W WIDTH
	31' TO 60'	SECTION B	6" GRAVEL BORROW OR PIT-RUN GRAVEL PLUS 2 1/2" CSBC GRAVEL PLUS 1 1/2" CSTC GRAVEL AND PAVED APRON
4 (URBAN)	LESS THAN 30'	---	INADEQUATE R/W WIDTH
4 - 8 (RURAL)	31' TO 60'	SECTION B	6" GRAVEL BORROW OR PIT-RUN GRAVEL PLUS 2 1/2" CSBC GRAVEL PLUS 1 1/2" CSTC GRAVEL AND PAVED APRON
5+ (URBAN)	ROAD IMPROVEMENT REQUIREMENTS DETERMINED BY PUBLIC WORKS.		
9+ (RURAL)			

NOTES:

- SEE STANDARD DRAWING 3-070 FOR ROADWAY SECTIONS.
- APPLIES TO EXISTING LOTS CREATED PRIOR TO JULY 1, 1992. NUMBER OF LOTS REFERS TO THE TOTAL NUMBER OF EXISTING LOTS THAT WILL RECEIVE ACCESS VIA THE COUNTY R/W THROUGH THE TRAIL PERMIT PROCESS.
- ANY PROPOSED ACCESS VIA COUNTY R/W TO ANY LOT SUBDIVIDED ON OR AFTER JULY 1, 1992 SHALL BE EVALUATED ON A CASE BY CASE BASIS BY PUBLIC WORKS.

SEE TEXT SECTION 3-05

D.L.D.: 3/17/00
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SNOHOMISH COUNTY PUBLIC WORKS

3-075

TRAIL ACCESS PERMIT ROAD DIMENSIONS

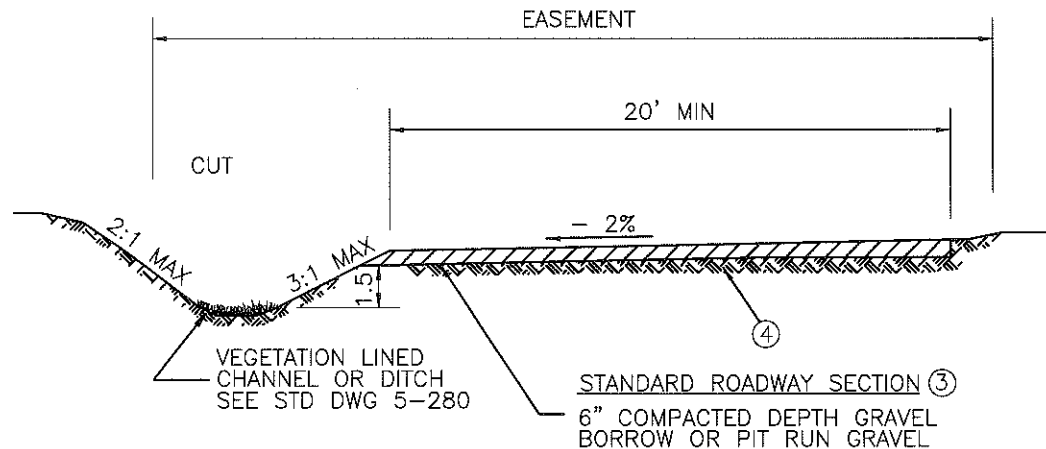
APPROVED BY:

Stuart E. Morrison 2-7-03

COUNTY ROAD ENGINEER

DATE

90 ADT OR LESS



NOTES:

1. ROAD SHALL BE PRIVATELY MAINTAINED BY A HOMEOWNERS ASSOCIATION.
2. REFER TO STD DWG 3-060 FOR GEOMETRIC STANDARDS.
3. ROADWAY SECTION MAY BE ADJUSTED WITH THE APPROVAL OF THE ENGINEER UPON SUBMISSION OF SUBSTANTIATING ENGINEERING DATA (SOILS TESTS, ETC.)
4. SUBGRADE SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTION 2-03.3(14)C OF THE WSDOT/APWA SPECIFICATIONS (METHOD B). SURFACING MATERIALS SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY (MODIFIED PROCTOR).
5. PRIVATE ROAD INTERSECTIONS SHALL COMPLY WITH STD DWG 3-100.

SEE TEXT SECTION 3-05

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SNOHOMISH COUNTY PUBLIC WORKS

3-080

PRIVATE LOW VOLUME ACCESS ROAD (RURAL)

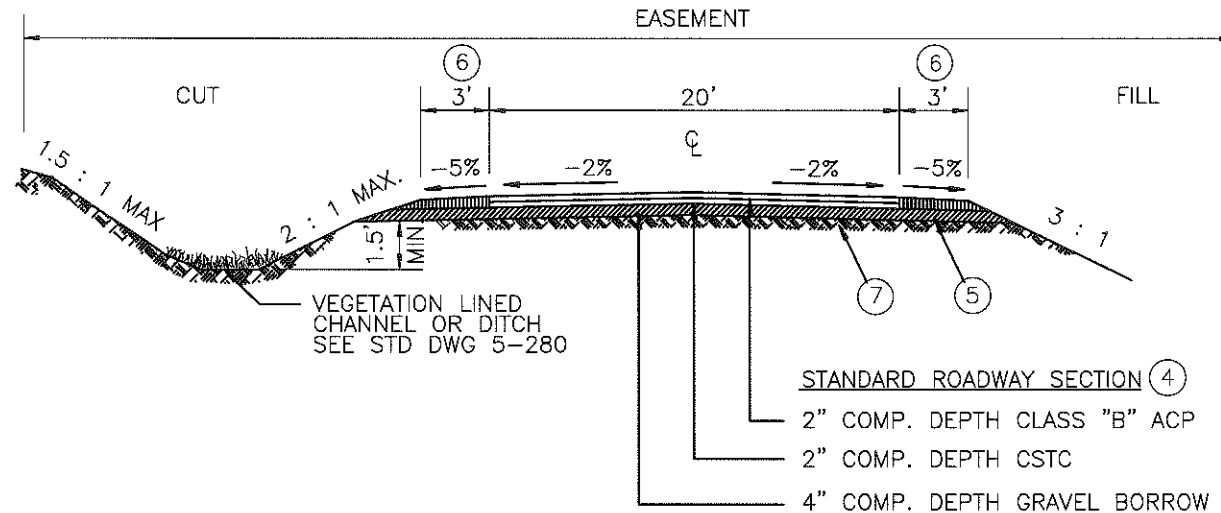
APPROVED BY:

Steven C. Harman 4-17-03

COUNTY ROAD ENGINEER

DATE

91 TO 1000 ADT



NOTES:

1. ROAD SHALL BE PRIVATELY MAINTAINED BY A HOMEOWNERS ASSOCIATION.
2. REFER TO STD DWG 3-060 FOR GEOMETRIC STANDARDS.
3. PRIVATE ROAD INTERSECTIONS SHALL COMPLY WITH STD DWG 3-100.
4. ROADWAY SECTION MAY BE ADJUSTED WITH THE APPROVAL OF THE ENGINEER UPON SUBMISSION OF SUBSTANTIATING ENGINEERING DATA (SOILS TESTS, ETC.)
5. AT THE ENGINEER'S DISCRETION, THE 4 INCH GRAVEL BORROW LAYER MAY BE ELIMINATED OR SUBSTITUTED WITH A LESSER THICKNESS OF GRAVEL BORROW OR EQUIVALENT MATERIAL WHEN SUBGRADE CONDITIONS WARRANT, AS SUBSTANTIATED BY MATERIALS TESTING.
6. A WALKWAY WILL BE REQUIRED WHERE THE PRIVATE ROAD ADT IS PROJECTED TO BE 250 OR GREATER. THE WALKWAY SHALL CONSIST OF A 7 (SEVEN) FT. PAVED SHOULDER ON ONE SIDE OF THE ROAD, DELINEATED BY A FOUR INCH WHITE PAINTED STRIPE. A 3 FT. PAVED SHOULDER SHALL BE PROVIDED ON THE OTHER SIDE.
7. SUBGRADE SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTION 2-03.3(14)C OF THE WSDOT/APWA SPECIFICATIONS (METHOD B). SURFACING MATERIALS SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D1557.

SEE TEXT SECTION 3-05

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SNOHOMISH COUNTY PUBLIC WORKS

3-090

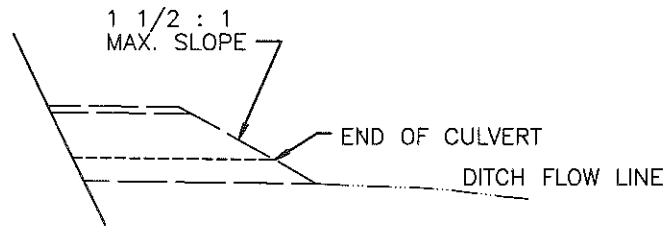
PRIVATE SUBCOLLECTOR ROAD (RURAL)

APPROVED BY:

Steve E. Norman 4-17-03

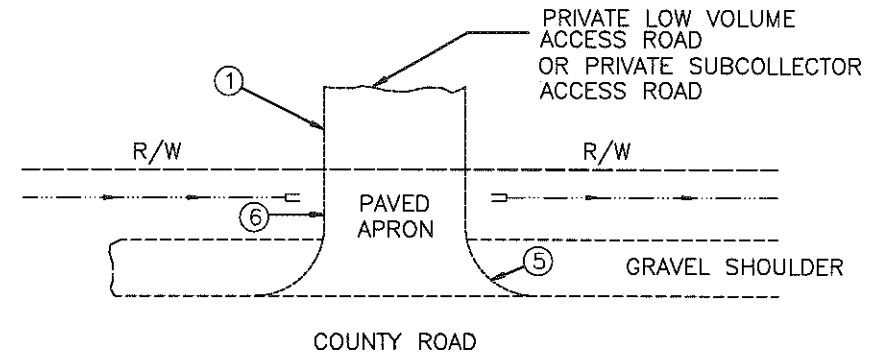
COUNTY ROAD ENGINEER

DATE



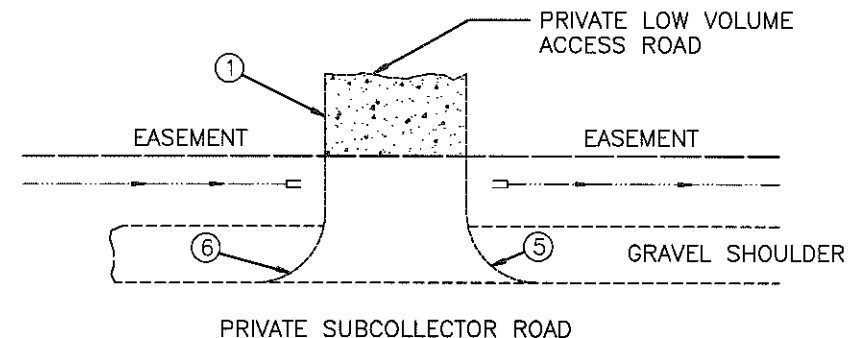
DETAIL FOR SECTION A

② ③ ④



SECTION A

INTERSECTION WITH COUNTY ROAD



SECTION B

INTERSECTION WITH PRIVATE SUBCOLLECTOR ACCESS ROAD

NOTES:

1. ALL SURFACE DRAINAGE FROM THE PRIVATE ROAD MUST BE DIRECTED FROM THE ROAD TO THE THE OPEN DITCH. NO SURFACE DRAINAGE SHALL FLOW ONTO THE COUNTY ROAD.
2. CULVERT PIPE SHALL BE 12 INCHES MINIMUM DIAMETER AND LARGER IF DRAINAGE REQUIRES.
3. COVER DEPTHS LESS THAN 12" REQUIRE APPROVAL BY THE ENGINEER.
4. A DRIVEWAY CULVERT HEADWALL, SUBJECT TO APPROVAL BY THE ENGINEER, MAY BE USED IN LIEU OF THE 1-1/2 : 1 SIDESLOPE.
5. MINIMUM RADII VARY. SEE STANDARD DRAWING 2-010.
6. A PAVED APRON IS REQUIRED AT ALL INTERSECTIONS WITH COUNTY ROADS. PAVED APRON SECTION SHALL BE EQUIVALENT TO STANDARD ROADWAY SECTION FOR PRIVATE SUBCOLLECTOR ROAD (SEE STD DWG 3-090) OR BETTER.
7. ADDITIONAL PAVEMENT THICKNESS MAY BE REQUIRED FOR HEAVY VEHICLE TRAFFIC.

SEE TEXT SECTION 3

D.L.D.: 3/20/00
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SNOHOMISH COUNTY PUBLIC WORKS

3-100

PRIVATE ROAD INTERSECTIONS (RURAL)

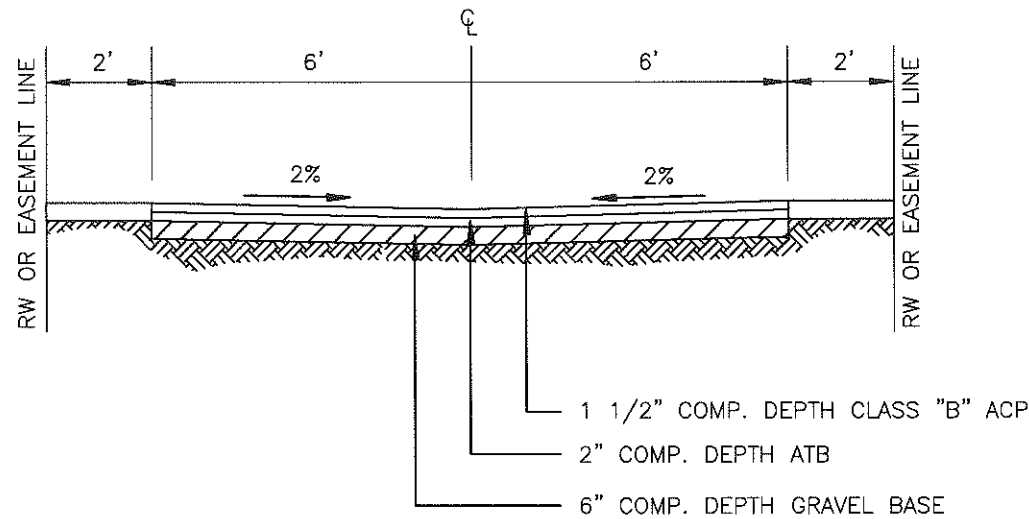
APPROVED BY:

Steve E. Hornum

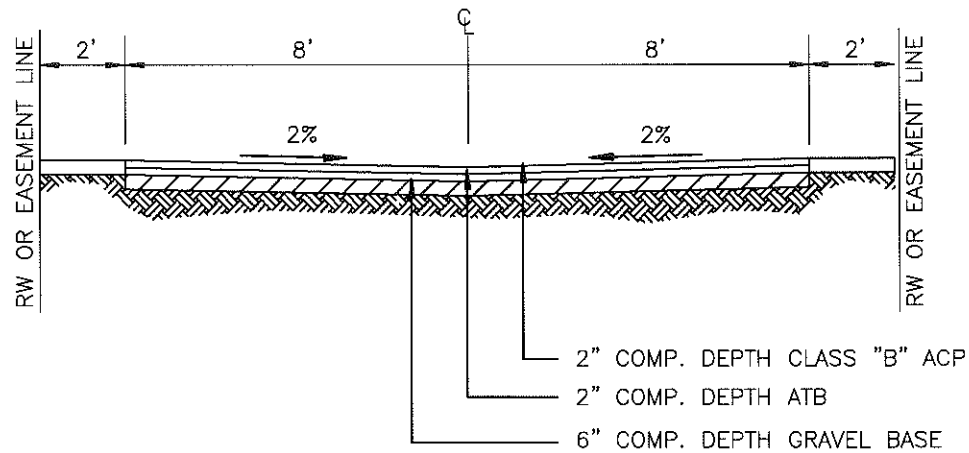
COUNTY ROAD ENGINEER

2-7-03

DATE



RESIDENTIAL



COMMERCIAL

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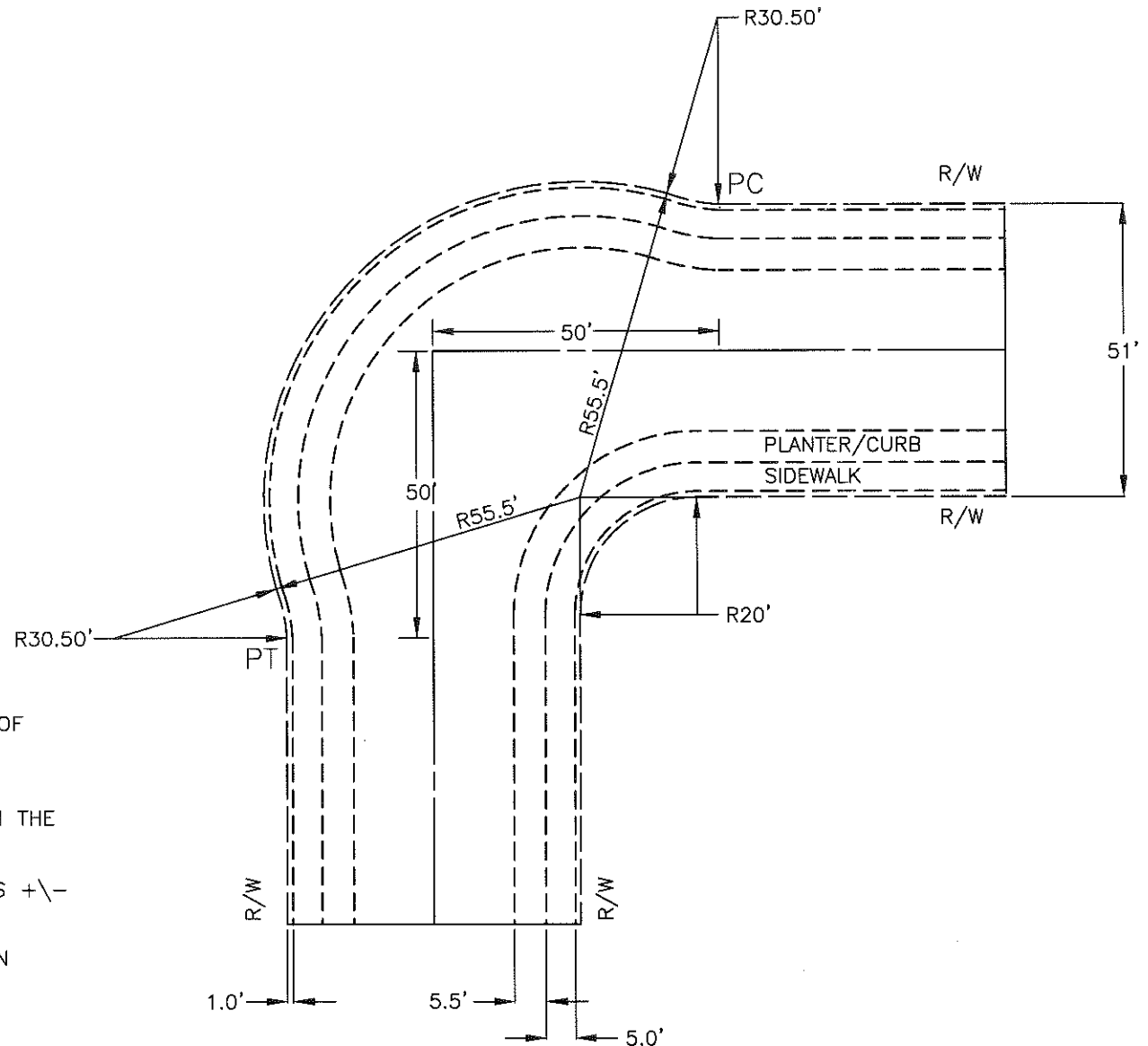
SNOHOMISH COUNTY PUBLIC WORKS

3-102

ALLEYS-RESIDENTIAL & COMMERCIAL

APPROVED BY:

Stewart E. Thorne 10-1-04
COUNTY ROAD ENGINEER DATE



NOTES:

1. INTERSECTION BULBS MAY BE USED IN LIEU OF HORIZONTAL CURVES FOR CERTAIN LOW-SPEED DESIGNS. REFER TO TEXT TABLE 3-4.
 2. A MINIMUM 50' TANGENT IS REQUIRED FROM THE POINT OF INTERSECTION OF THE CENTERLINES.
 3. INTERSECTION ANGLE SHALL BE 90 DEGREES \pm 10 DEGREES.
 4. RADII SHOWN APPLY FOR A 51-FOOT URBAN NON-ARTERIAL R/W.
- SEE TEXT SECTION 3-06.

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SNOHOMISH COUNTY PUBLIC WORKS

3-105

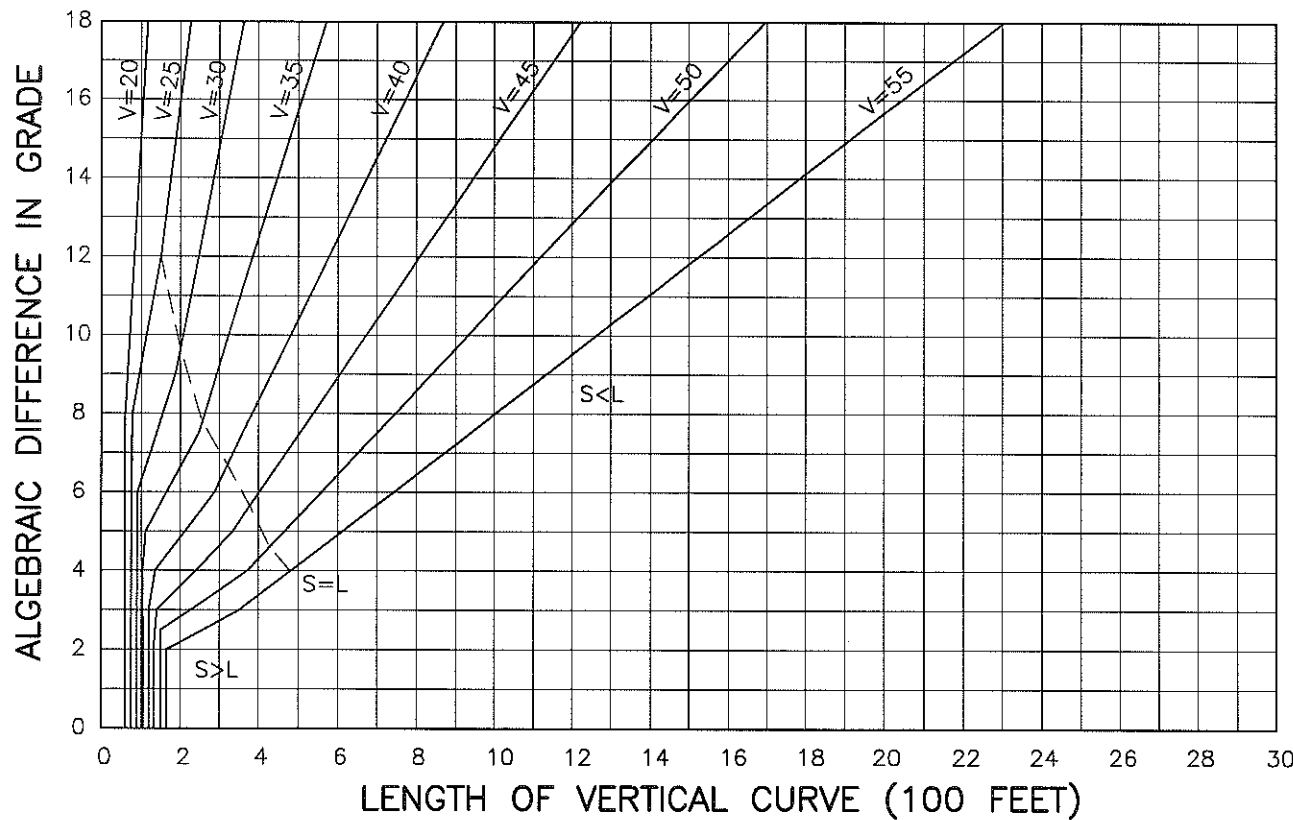
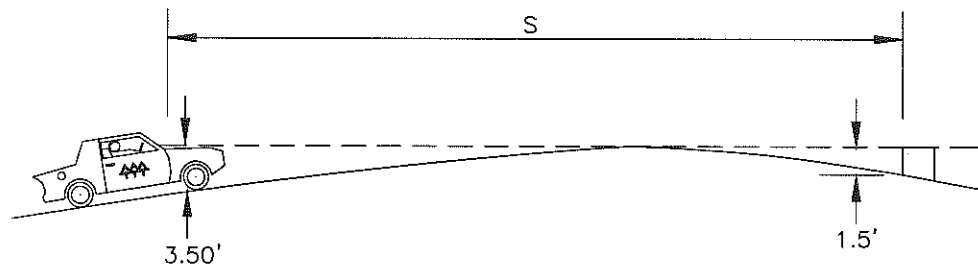
90° INTERSECTION ELBOW

APPROVED BY:

Stuart C. Horner 2-25-03

COUNTY ROAD ENGINEER

DATE



WHEN $S > L$	WHEN $S < L$
$L = 2S - \frac{1917}{A}$	$L = \frac{AS^2}{1917}$
L = CURVE LENGTH (FEET) A = ALGEBRAIC GRADE DIFFERENCE (PERCENT) S = SIGHT DISTANCE (FEET)	

DESIGN SPEED (MPH)	DESIRABLE MINIMUM STOPPING DISTANCE (FEET)	MINIMUM LENGTH (FEET)
20	115	60
25	155	75
30	200	90
35	250	105
40	305	120
45	360	135
50	425	150
55	495	165

NOTES:

1. L = MINIMUM LENGTH OF CURVE BASED ON MINIMUM STOPPING SIGHT DISTANCE.

SEE TEXT CHAPTER 3

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SNOHOMISH COUNTY PUBLIC WORKS

3-110

CREST VERTICAL CURVES

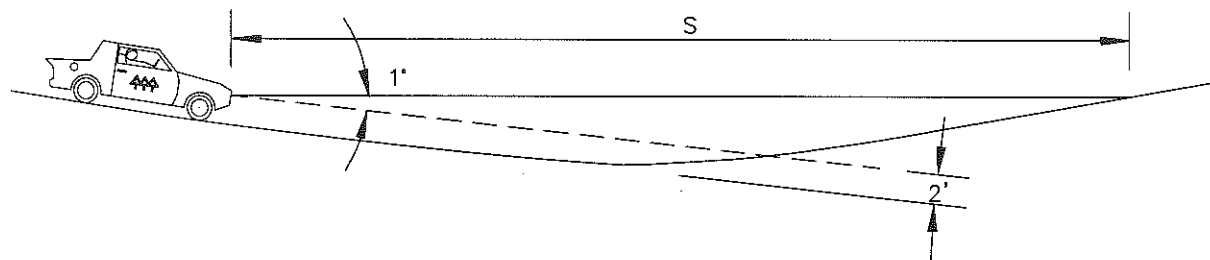
APPROVED BY:

Stewart E. Hornum

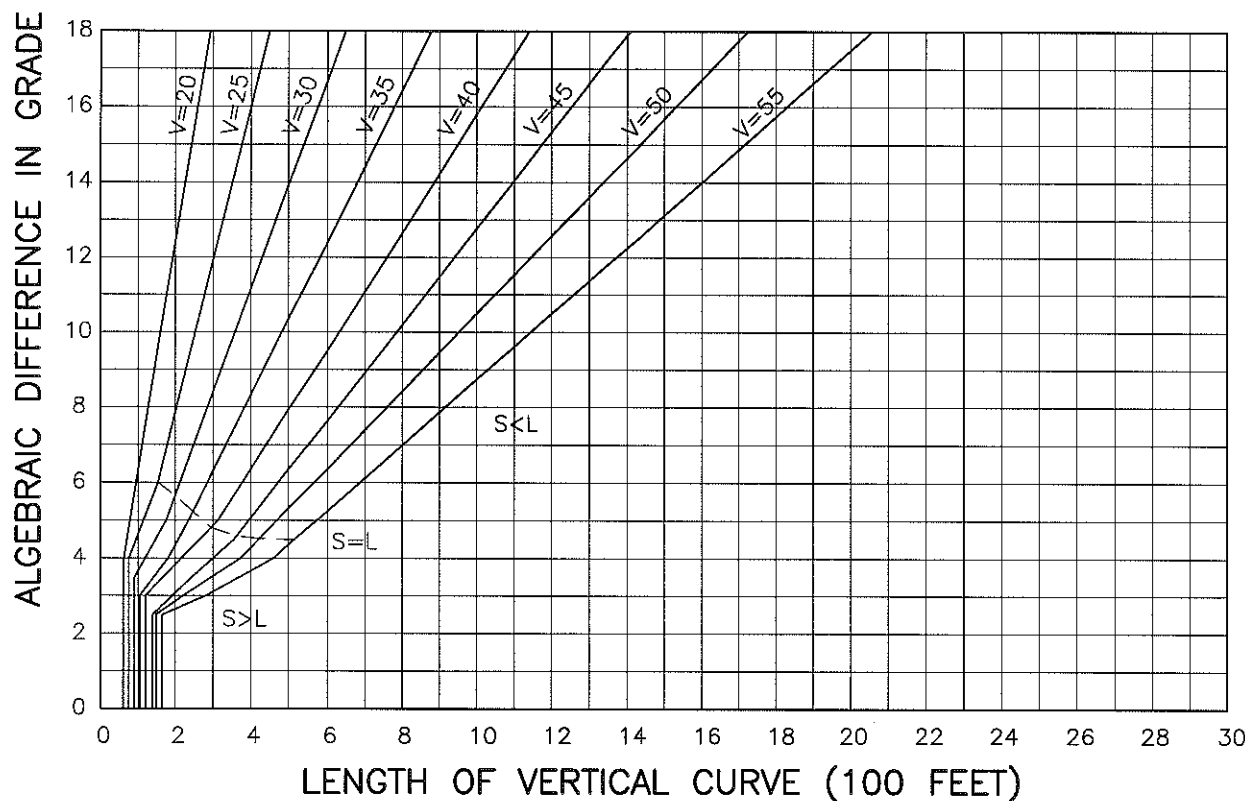
COUNTY ROAD ENGINEER

10-1-09

DATE



INCREASE FOR DOWNGRADES:
SEE TABLE 3-7 IN TEXT



WHEN $S > L$	WHEN $S < L$
$L = 2S - \frac{400 + 3.5S}{A}$	$L = \frac{AS^2}{400 + 3.5S}$
L = CURVE LENGTH (FEET) A = ALGEBRAIC GRADE DIFFERENCE (PERCENT) S = SIGHT DISTANCE (FEET)	

DESIGN SPEED (MPH)	DESIRABLE MINIMUM STOPPING DISTANCE (FEET)	MINIMUM LENGTH (FEET)
20	115	60
25	155	75
30	200	90
35	250	105
40	305	120
45	360	135
50	425	150
55	495	165

NOTES:

1. L = MINIMUM LENGTH OF CURVE BASED ON MINIMUM STOPPING SIGHT DISTANCE.

SEE TEXT CHAPTER 3



SNOHOMISH COUNTY PUBLIC WORKS

3-120

SAG VERTICAL CURVES

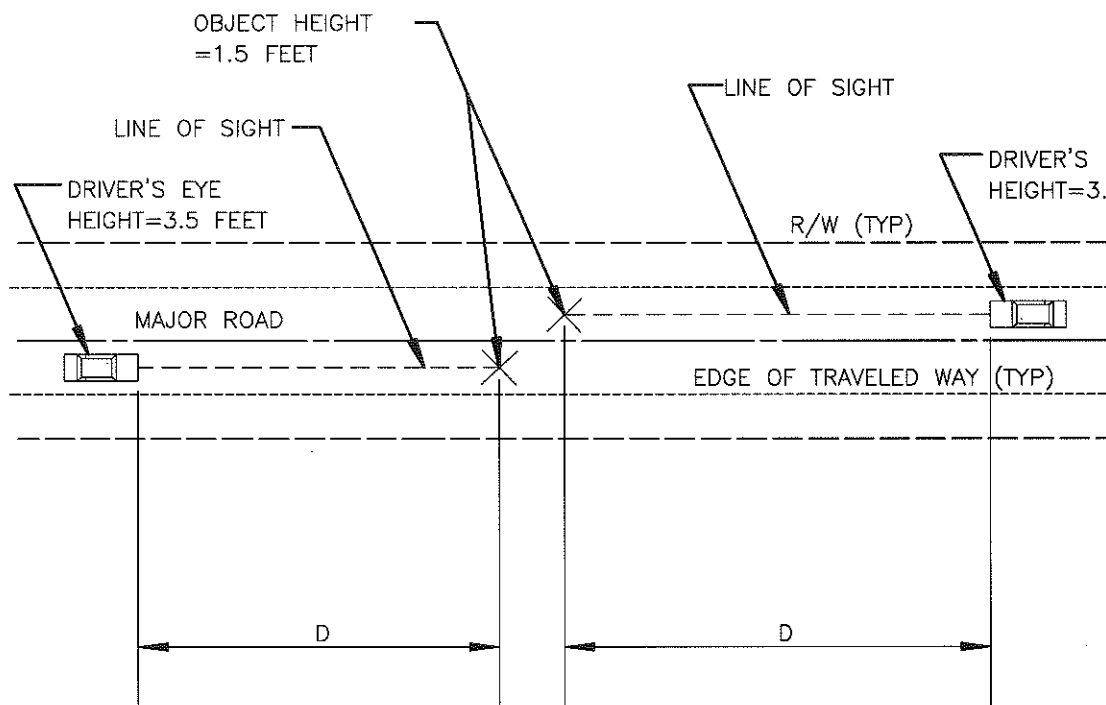
APPROVED BY:

James E. Morrison

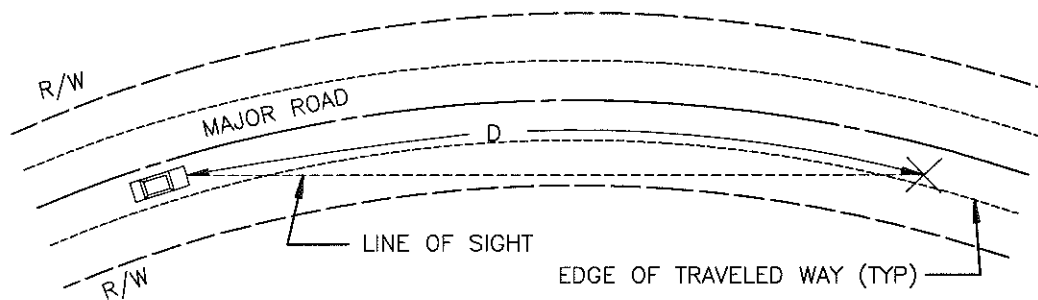
COUNTY ROAD ENGINEER

10-1-04

DATE



STOPPING SIGHT DISTANCE

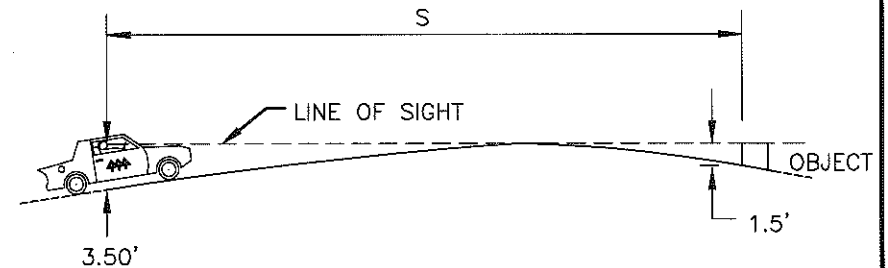


NOTES:

1. CREST VERTICAL CURVE CONDITION SHOWN. FOR EVALUATION OF CREST VERTICAL CURVE ALIGNMENT FOR STOPPING SIGHT DISTANCE REQUIREMENTS, REFER TO STD DWG 3-110. FOR EVALUATION OF SAG VERTICAL CURVE ALIGNMENT FOR STOPPING SIGHT DISTANCE REQUIREMENTS, REFER TO STD DWG 3-120.

SEE TEXT SECTION 3-07 & 3-08.

D=STOPPING SIGHT DISTANCE



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SNOHOMISH COUNTY PUBLIC WORKS

3-130

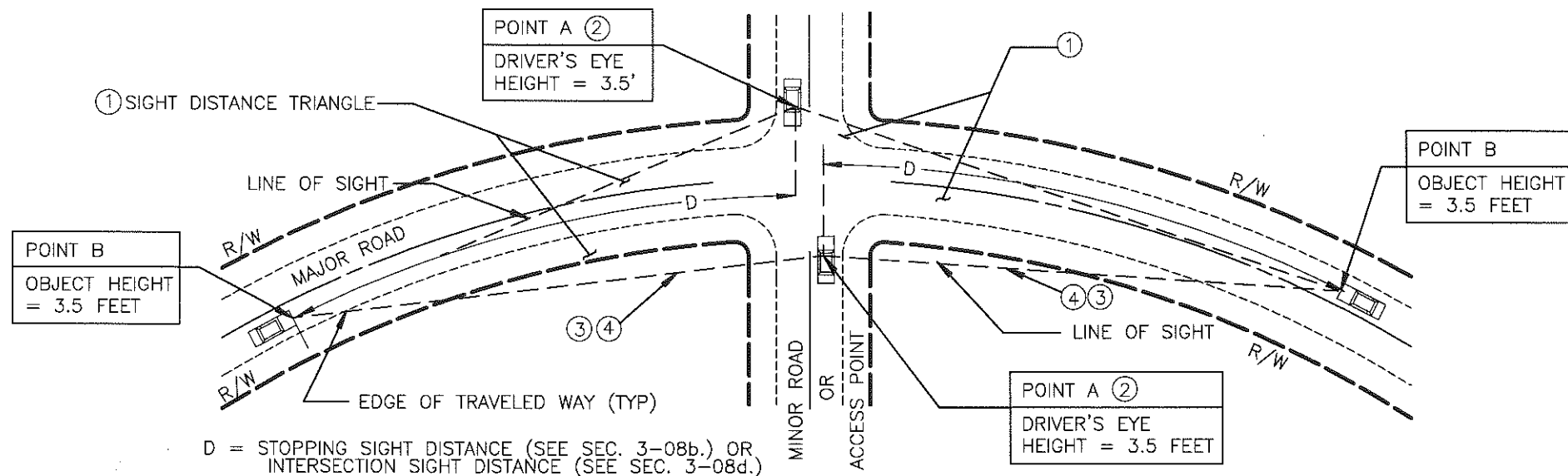
STOPPING SIGHT DISTANCE

APPROVED BY:

Shirley E. Monahan 2-25-03

COUNTY ROAD ENGINEER

DATE



NOTES:

1. AT ANY INTERSECTION OR ACCESS POINT CONNECTION, THERE MUST EXIST CLEAR SIGHT TRIANGLES, FREE OF SIGHT OBSCURING OBJECTS. UNOBSTRUCTED LINES OF SIGHT MUST BE PROVIDED FROM A POINT ON THE MINOR ROAD 15 FEET BEHIND THE EDGE OF TRAVELED WAY (POINT A) TO ALL POINTS IN THE TRAVELED WAY INCLUDED IN THE CLEAR SIGHT TRIANGLES. THE BASE OF EACH CLEAR SIGHT TRIANGLE SHALL BE AT LEAST EQUAL TO THE STOPPING SIGHT DISTANCE D.
2. THE DRIVER'S EYE TO DETERMINE LINE OF SIGHT AT INTERSECTIONS IS 3.5 FEET ABOVE THE MINOR ROAD PAVEMENT, WITH AN OBJECT HEIGHT OF 3.5 FEET ABOVE THE MAJOR ROAD PAVEMENT.
3. THE AREA WITHIN THE CLEAR SIGHT TRIANGLE MUST BE FREE FROM ANY SIGHT OBSCURING OBJECTS. GROUND SHALL BE REGRADED AND VEGETATION TRIMMED OR REMOVED SO THAT NO OBJECT PROTRUDES CLOSER THAN 18 INCHES TO THE LINE OF SIGHT BETWEEN THE MINOR ROAD/ACCESS POINT AND THE MAJOR ROAD.
4. AREA WITHIN THE CLEAR SIGHT TRIANGLE BUT OUTSIDE OF EXISTING PUBLIC RIGHT-OF-WAY SHALL EITHER BE ACQUIRED AS NEW PUBLIC RIGHT-OF-WAY OR A SIGHT DISTANCE EASEMENT RECORDED FOR FUTURE COUNTY MAINTENANCE.

SEE TEXT SECTION 3-08.



SNOHOMISH COUNTY PUBLIC WORKS

3-140

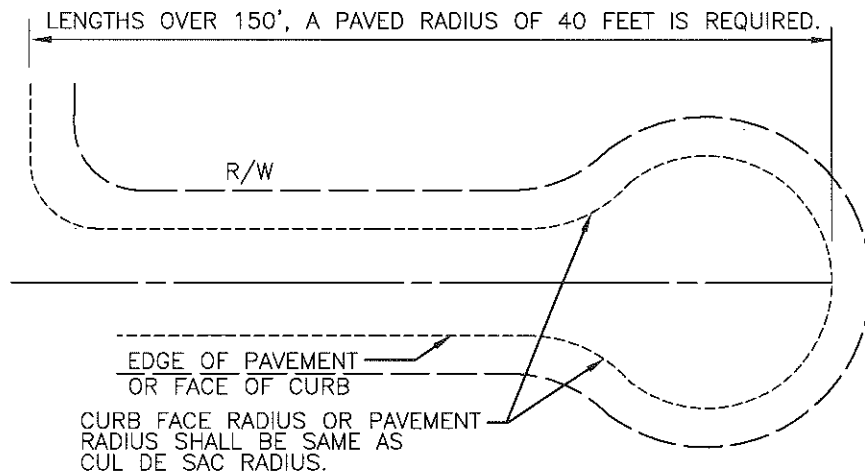
CLEAR SIGHT TRIANGLES

APPROVED BY:

Stewart C. Thompson 10-1-04

COUNTY ROAD ENGINEER

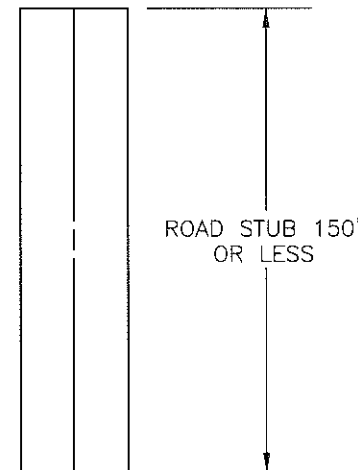
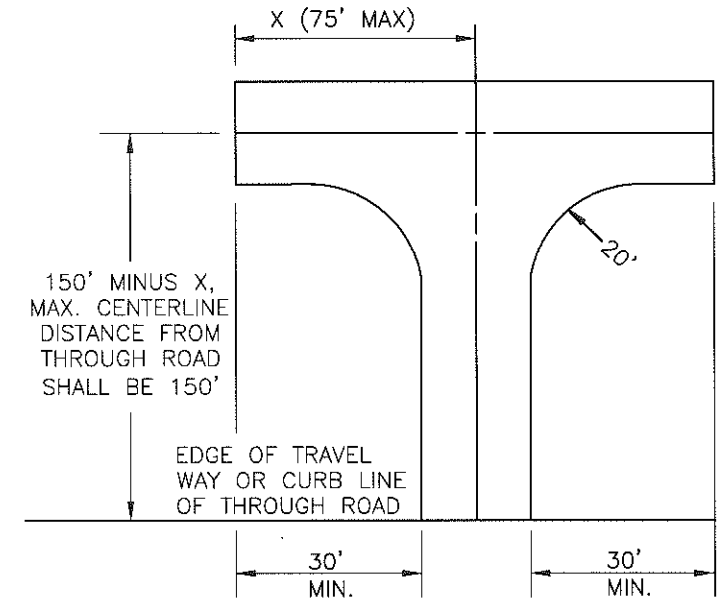
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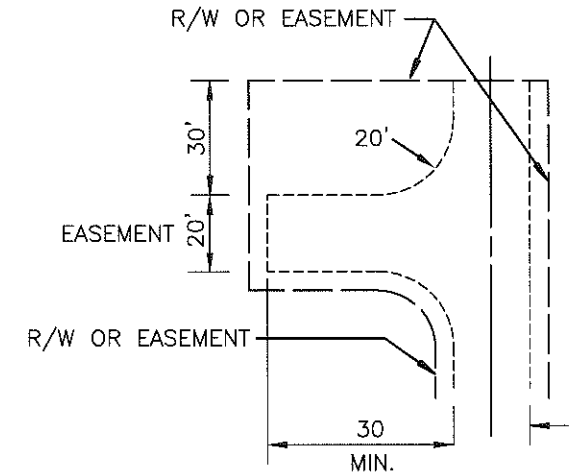
CUL-DE-SAC (PERMANENT)

NOTES:

1. ROAD WIDTH AND PAVEMENT SECTION SHALL BE AS SPECIFIED FOR EACH CLASS OF ROAD. REFER TO SECTION 3 AND STANDARD DRAWINGS 3-010 THROUGH 3-060.
2. LENGTH OF ROAD END IS MEASURED FROM THE FACE OF CURB LINE (EXTENDED) OF THE PREVIOUS INTERSECTING ROAD.
3. NO DRIVE THROUGH CUL DE SACS ARE ALLOWED.
4. HAMMERHEAD TURNAROUNDS ARE ALLOWED ONLY UPON APPROVAL OF THE FIRE MARSHAL AS A TEMPORARY TURNAROUND.
5. PERMANENT ROAD ENDS SHALL INCLUDE PEDESTRIAN FACILITIES IN URBAN AREAS OR WHERE THESE FACILITIES ARE PROVIDED ALONG THE ROAD LEADING TO THE PERMANENT ROAD END. PEDESTRIAN FACILITIES ARE NOT REQUIRED ALONG ROADS 150 FEET OR LESS IN LENGTH.
6. ROADS 150 FEET OR LESS MAY END IN A ROAD STUB. HOWEVER, IF FOUR OR MORE ACCESS POINTS ARE LOCATED WITHIN 50 FEET OF THE ROAD END, THEN A CUL-DE-SAC WITH A MINIMUM PAVED RADIUS OF 30 FEET IS REQUIRED.
7. PLANTER STRIPS MAY BE INSTALLED, BUT ARE NOT REQUIRED, AROUND PERMANENT OR TEMPORARY ROAD ENDS. SEE TEXT SECTION 3-10



ROAD STUB



HAMMERHEAD (TEMPORARY)



SNOHOMISH COUNTY PUBLIC WORKS

3-150

ROAD ENDS

APPROVED BY:

Steve E. Morrison 10-1-04
COUNTY ROAD ENGINEER DATE



NOTES:

1. TYPE 1 RAISED PAVEMENT MARKERS, 3' O.C. SEE WSDOT/APWA SPECIFICATIONS.
2. FAR SIDE BUS PULLOUTS ARE PREFERRED. FOR DESIGN GUIDANCE RELATIVE TO NEAR SIDE AND MIDDLE BLOCK BUS PULLOUTS, SEE THE WSDOT DESIGN MANUAL, CHAPTER 1060.
3. SEE TEXT SECTION 3-13 AND STD DRAWINGS 3-010 THROUGH 3-065 FOR PAVEMENT SECTIONS.



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SNOHOMISH COUNTY PUBLIC WORKS

3-160

BUS PULLOUTS

APPROVED BY:


2.28.03
 COUNTY ROAD ENGINEER DATE

CHAPTER 4 DRAWING INDEX

4-010	Small Trees 25'-35' Height
4-020A	Medium Trees 30'-50' Height
4-020B	Medium Trees 30'-50' Height
4-030	Large Trees 50' Height or Larger
4-040	Shrubs and Groundcovers
4-050	Standard Planting Strip
4-060	Planting Strip Behind Sidewalk
4-070	Combination Planting Strips
4-080	Small Shrub - Groundcover Spacing
4-090	Tree and Lawn Planting Strip
4-100	Tree and Groundcover Planting Strip
4-110	Shrub, Tree and Groundcover Planting Strip
4-120	Compacted Fill Removal/Replacement
4-130	Monument Case and Cover
4-140	Curb Details (Vertical and Rolled)
4-145	Curb Details (Asphalt Thickened Edge, Extruded Curb)
4-150	Sidewalk Details
4-160	Asphalt Walkway
4-170	Bollards
4-180	Barricades - General
4-185	Type III Barricade
4-190	Mailbox Turnout - Collector & Arterial
4-200	Pedestrian Handrail Details
4-202	Pedestrian Handrail Details
4-204	Ornamental Handrail Details
4-210	Rockery
4-220	Rockery, Fill Section (Deleted 2004 Revision)

		HEIGHT + OR - 30'	10'-20' SPREAD	20'-30' SPREAD	DROUGHT TOLERANT	SEASONAL COLOR	REQUIRES MOIST SOIL	
<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>							<u>REMARKS</u>
ACER CAMPESTRE (EVELYN)	QUEEN ELIZABETH HEDGE MAPLE	+	●	●	●	●		YELLOW FALL COLOR, UPRIGHT AND ROUND
ACER GRISEUM	PAPERBARK MAPLE	-	●			●	●	RED FALL COLOR, EXFOLIATING BARK
ACER PLATANOIDES (GLOBOSUM)	GLOBE NORWAY MAPLE	-	●			●		SHORT, 15' TALL, COMPACT ROUND CANOPY
ACER TRUNCATUM X A. PLATANOIDES	KEITHSFORM NORWEGIAN SUNSET MAPLE	+		●		●		FALL YELLOW/ORANGE/RED
ACER TRUNCATUM X A. PLATANOIDES	WARRENRED PACIFIC SUNSET MAPLE	-		●		●		SHORTER, MORE SPREADING THAN KEITHSFORM
CRATAEGUS X LAVALII	LAVALLE HAWTHORN	-	●			●		RED FALL LEAVES AND FRUIT
CRATAEGUS PHAENOPYRUM	WASHINGTON HAWTHORN	-	●			●		THORNY, RED FALL COLOR
KOELREUTERIA PANICULATA	GOLDENRAIN TREE	-		●	●	●		YELLOW SUMMER FLOWERS AND FALL COLOR
MAGNOLIA GRANDIFLORA	EDITH BOGUE MAGNOLIA	-	●			●	●	WHITE BLOOMS, EVERGREEN, PYRAMIDAL, SNOW RESISTANT
MALUS (TSCHONOSKII)	TSCHONOSKII CRAB APPLE	-	●			●	●	DISEASE RESISTANT, PYRAMIDAL FORM
PRUNUS X HILLIERI (SPIRE)	SPIRE CHERRY	-	●			●		NARROW, PINK BLOOMS
PYRUS CALLERYANA (CAPITAL)	CAPITAL PEAR	+	●			●		SMALL NARROW UPRIGHT FORM
PYRUS CALLERYANA (AUTUMN BLAZE)	AUTUMN BLAZE PEAR	+		●		●		ROUND FORM, RED FALL COLOR
SORBUS X HYBRIDA	OAK-LEAF MOUNTAIN ASH	-	●		●	●		RED FRUIT, RUST FALL COLOR
TILIA CORDATA (CHANCOLE)	CHANCELLOR LINDEN	-		●		●		UPRIGHT, TIGHTLY PYRAMIDAL

NOTES:

1. THESE TREES ARE SUITABLE FOR USE IN PLANTER STRIPS ALONG 2-LANE ROADS AND UNDER UTILITY LINES.

2. AVERAGE TREE SPACING: 25'-30' O.C.

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SNOHOMISH COUNTY PUBLIC WORKS

4-010

SMALL TREES 25'-35' HEIGHT

APPROVED BY:

Steven E. Monahan

2-25-03

COUNTY ROAD ENGINEER

DATE

		HEIGHT + OR - 40'	10'-20' SPREAD	20'-30' SPREAD	30'-40' SPREAD	DROUGHT TOLERANT	SEASONAL COLOR	REQUIRES MOIST SOIL	
BOTANICAL NAME	COMMON NAME								REMARKS
ACER X FREEMANII (JEFFERSRED)	AUTUMN BLAZE MAPLE	+			●	●	●		BRILLIANT ORANGE FALL COLOR, UPRIGHT AND ROUND
ACER NIGRUM (GREENCOLUMN)	GREENCOLUMN MAPLE	+	●				●		UPRIGHT OVAL FORM, YELLOW/ORANGE FALL COLOR
ACER PLATANOIDES (COLUMNAR)	COLUMNAR NORWAY MAPLE	-	●				●		VERY NARROW, YELLOW FALL COLOR
ACER PLATANOIDES (EMERALD QUEEN)	EMERALD QUEEN MAPLE	+			●		●		DURABLE STANDARD, OVAL UPRIGHT
ACER PLATANOIDES (COLUMNARBROAD)	PARKWAY MAPLE	-		●			●		GOOD FORM, DURABLE, YELLOW FALL COLOR
ACER RUBRUM (BOWHALL)	BOWHALL MAPLE	-	●				●	●	VERY NARROW, ORANGE FALL COLOR
ACER RUBRUM (KARPICK)	KARPICK MAPLE	-	●				●	●	MEDIUM NARROW, YELLOW/ORANGE FALL COLOR
ACER RUBRUM (SCARSEN)	SCARLET SENTINEL MAPLE	-	●				●	●	UPRIGHT BRANCHING HABIT
AESCULUS X CARNEA (BRIOTTII)	BRIOTTI RED HORSECHESTNUT	-			●			●	LOW, WIDE, AND ROUND
BETULA JACQUEMONTII	JACQUEMONTII BIRCH	-		●				●	BRILLIANT WHITE BARK
CARPINUS BETULUS (FASTIGIATA)	PYRAMIDAL EUROPEAN HORNBEAM	-		●		●	●		STARTS NARROW, BROADENS TO OVAL WITH AGE
CERCIDIPHYLLUM JAPONICUM	KATSURA TREE	-			●		●	●	VARIABLE UPRIGHT FORM, APRICOT FALL COLOR
FRAXINUS OXYCARPA (RAYWOOD)	RAYWOOD ASH	+		●			●	●	BRIGHT REDDISH PURPLE FALL COLOR
FRAXINUS PENNSYLVANICA (PATMORE)	PATMORE ASH	+			●		●		EXTREMELY HARDY, UPRIGHT BRANCHES
FRAXINUS AMERICANA (AUTUMN APPLAUSE)	AUTUMN APPLAUSE ASH	+		●			●		GOOD PURPLE FALL COLOR, SMALL AND DENSE
FRAXINUS PENNSYLVANICA (URBANITE)	URBANITE ASH	+			●		●		TALL, BROAD, AND UPRIGHT WITH BRONZE FALL COLOR

NOTES:

1. STREET TREES IN PLANTER STRIPS ALONG SNOHOMISH COUNTY ROADWAYS ARE TO BE FROM THIS LIST OF MEDIUM SIZE TREES, UNLESS SPECIAL CONDITIONS SUCH AS OVERHEAD WIRES OR WIDE PLANTING AREAS FAVOR SMALL OR LARGE TREES AS DETERMINED BY THE SNOHOMISH COUNTY ENGINEER.

2. AVERAGE TREE SPACING: 35'-40' O.C.

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SNOHOMISH COUNTY PUBLIC WORKS

4-020A

MEDIUM TREES 30'-50' HEIGHT

APPROVED BY:

Stetson E. Monahan 2-25-03
COUNTY ROAD ENGINEER DATE

		HEIGHT + OR - 40'	10'-20' SPREAD	20'-30' SPREAD	30'-40' SPREAD	DROUGHT TOLERANT	SEASONAL COLOR	REQUIRES MOIST SOIL	REMARKS
BOTANICAL NAME	COMMON NAME								
GINKGO BILOBA (AUTUMN GOLD)	AUTUMN GOLD GINKGO	+			●		●		BROADLY PYRAMIDAL, GOLDEN YELLOW FALL COLOR
GINKGO BILOBA (PRINCETON SENTRY)	PRINCETON SENTRY GINKGO	+	●				●		NARROWLY PYRAMIDAL, BRIGHT YELLOW FALL COLOR
GLEDITSIA TRIACANTHOS (SHADEMASTER)	SHADEMASTER HONEYLOCUST	+			●		●		LACY, OPEN FORM, YELLOW FALL COLOR
LIQUIDAMBAR STYRACIFLUA (MORAINE)	MORAINE SWEETGUM	-		●			●		COLD HARDY, BURGUNDY FALL COLOR
LIQUIDAMBAR STYRACIFLUA (ROTUNDILOBA)	ROTUNDILOBA SWEETGUM	+		●			●		FRUITLESS, ROUNDED LOBES, ORANGE TO PURPLE FALL COLOR
LIQUIDAMBAR STYRACIFLUA (WORPLESDON)	WORPLESDON SWEETGUM	-		●			●		BROADLY PYRAMIDAL, ORANGE AND PURPLE FALL COLOR
PRUNUS SARGENTII (COLUMNARIS)	COLUMNAR SARGENT CHERRY	-	●				●		PINK BLOOMS, ORANGE/RED FALL COLOR, VASE SHAPED
PYRUS CALLERYANA (ARISTOCRAT)	ARISTOCRAT PEAR	-		●			●		WHITE BLOOMS, RED FALL COLOR, SPREADING BRANCHES
PYRUS CALLERYANA (GLEN'S FORM)	CHANTICLEER FLOWERING PEAR	-	●				●		SIMILAR TO ARISTOCRAT, NARROWER
PYRUS CALLERYANA (REDSPIRE)	REDSPIRE PEAR	-		●			●		WHITE SPRING BLOOMS, DENSE AND SYMMETRICAL
QUERCUS ROBUR (FASTIGIATA)	SKYROCKET OAK	+	●						UNIFORMLY NARROW
ROBINIA X AMBIGUA (IDAHOENSIS)	PINK IDAHO LOCUST	-		●		●			FOR DRY LOCATIONS, ROSE-PINK FRAGRANT FLOWERS
SORBUS AUCUPARIA (MICHRED)	CARDINAL ROYAL MTN. ASH	-		●			●		RED BERRIES, UPRIGHT BRANCHES, NARROW OVAL
TILIA CORDATA (GREENSPIRE)	GREENSPIRE LINDEN	+			●			●	WIDER PYRAMIDAL FORM, SYMMETRICAL
ZELKOVA SERRATA (VILLAGE GREEN)	VILLAGE GREEN ZELKOVA	+			●		●		VIGOROUS, WIDE VASE FORM, RUSTY RED FALL COLOR

NOTES:

1. STREET TREES IN PLANTER STRIPS ALONG SNOHOMISH COUNTY ROADWAYS ARE TO BE FROM THIS LIST OF MEDIUM SIZE TREES, UNLESS SPECIAL CONDITIONS SUCH AS OVERHEAD WIRES OR WIDE PLANTING AREAS FAVOR SMALL OR LARGE TREES AS DETERMINED BY THE SNOHOMISH COUNTY ENGINEER.

2. AVERAGE TREE SPACING: 35'-40' O.C.

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SNOHOMISH COUNTY PUBLIC WORKS

4-020B

MEDIUM TREES 30'-50' HEIGHT

APPROVED BY:

Steve E. Morrison 2-25-03

COUNTY ROAD ENGINEER

DATE

BOTANICAL NAME	COMMON NAME	HEIGHT + OR - 50'	8' MIN. PLANTER WIDTH	10' MIN. PLANTER WIDTH	20'-30' SPREAD	20' TO 40' SPREAD	OVER 40' SPREAD	DROUGHT TOLERANT	SEASONAL COLOR	REQUIRES MOIST SOIL	REMARKS
ABIES GRANDIS	GRAND FIR	+		●			●			●	TALL EVERGREEN CONIFER
ACER SACCHARUM (BONFIRE)	BONFIRE MAPLE	+	●				●		●		FAST GROWING, ORANGE/RED FALL COLOR
ACER SACCHARUM (COMMEMORATION)	COMMEMORATION MAPLE	+	●			●			●		ORANGE FALL COLOR, RAPID GROWING
ACER SACCHARUM (GREEN MOUNTAIN)	GREEN MOUNTAIN MAPLE	-	●			●			●		HARDY, RED FALL COLOR
CALOCEDRUS DECURRENS	INCENSE CEDAR	+	●		●			●			EVERGREEN, NARROW FORM
LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	+				●			●	●	PYRAMIDAL FORM, YELLOW/RED/PURPLE FALL COLOR
LIRIODENDRON TULIPIFERA	TULIP TREE	+				●					STRONG CENTRAL TRUNK, NARROW FORM
NYSSA SYLVATICA	BLACK TUPELO	-	●		●				●		ORANGE FALL COLOR, SHAPE SPREADS WITH AGE
PLATANUS X ACERIFOLIA (BLOODGOOD)	BLOODGOOD LONDON PLANETREE	+		●		●			●		LARGE SPREADING TREE, PATCHY BARK
PSEUDOTSUGA MENZIESII	DOUGLAS FIR	+		●		●		●			VERY TALL EVERGREEN CONIFER
QUERCUS COCCINEA	SCARLET OAK	+		●			●		●		UPRIGHT GROWTH, OVAL, BRILLIANT RED FALL COLOR
QUERCUS RUBRA	RED OAK	+					●		●		FAST GROWING, ROUNDED SHAPE, RED FALL COLOR
THUJA PLICATA	WESTERN RED CEDAR	+		●		●				●	FOR MOIST OR SHADY LOCATIONS
ULMUS (HOMESTEAD)	HOMESTEAD ELM	+	●			●					FAST GROWTH, RESISTS DUTCH ELM DISEASE
ULMUS (PIONEER)	PIONEER ELM	+		●			●		●		RESISTS DUTCH ELM DISEASE, YELLOW FALL COLOR

NOTES:

1. NOT FOR USE IN STANDARD PLANTER STRIPS OR UNDER UTILITY WIRES. USE FOR BACK OF SIDEWALK OR LARGE PLANTING STRIPS 8' TO 10' WIDE.
2. CONIFERS ONLY ON BACK OF SIDEWALK.
3. AVERAGE TREE SPACING: 35'-40' O.C.

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SNOHOMISH COUNTY PUBLIC WORKS

4-030

LARGE TREES 50' HEIGHT OR LARGER

APPROVED BY:

Steve E. Almon 2-25-03

COUNTY ROAD ENGINEER

DATE

		HEIGHT + OR - 24"	DROUGHT TOLERANT	BERRIES OR FLOWERS	REQUIRES MOIST SOIL	
BOTANICAL NAME	COMMON NAME					REMARKS
GROUNDCOVERS						
ARCTOSTAPHYLOS UVA-URSI	KINNIKINNICK	-	●	●		NATIVE EVERGREEN, LOW 3 IN. TO 9 IN. HT. VERY DROUGHT TOLERANT
ERICA CARNEA	WINTER HEATH	-		●		EVERGREEN, GROWS 2 FT. HT. BY 6 FT. WIDE, FLOWERS IN SPRING
RUBUS CALYCINOIDES	BRAMBLE	-	●	●		EVERGREEN, SPREADING GROUNDCOVER, SALMON COLORED BERRIES
SHRUBS						
BERBERIS THUNBERGII (CRIMSON PYGMY)	CRIMSON PYGMY BARBERRY	-		●		SMALL DECIDUOUS SHRUB, 18 IN. TO 24 IN., PURPLE FOLIAGE
CISTUS X HYBRIDUS	WHITE ROCKROSE	+	●	●		ROUNDED EVERGREEN SHRUB, GROWS 3 FT. TO 5 FT. HT., WHITE FLOWERS, VERY DROUGHT TOLERANT
CORNUS STOLONIFERA (KELSYEI)	KELSYEI RED TWIG DOGWOOD	-			●	DECIDUOUS MOUNDING SHRUB TO 2 FT. BRIGHT RED STEMS, NEEDS IRRIGATION
FESTUCA GLAUCA	BLUE FESCUE	-				SMALL CLUMPS OF EVERGREEN GRASS
GAULTHERIA SHALLON	SALAL	+	●	●		NATIVE EVERGREEN SHRUB, GROWS 2 FT.-4 FT. NEEDS TRIMMING, DROUGHT TOLERANT, WHITE FLOWERS, BLACK BERRIES
PINUS MUGO VAR. PUMILIO	COMPACT DWARF MUGO PINE	-				EVERGREEN SHRUB, GROWS SLOWLY TO 2 FT.
PRUNUS LAUROCERASUS (MT. VERNON)	MT. VERNON LAUREL	+		●		SMALL EVERGREEN SHRUB, GROWS SLOWLY TO 3 FT. HT.
PRUNUS LAUROCERASUS (OTTO LUYKEN)	OTTO LUYKEN LAUREL	+	●	●		SPREADING EVERGREEN SHRUB TO 3 FT., WHITE FLOWERS
VIBURNUM DAVIDII	DAVID VIBURNUM	+		●		2 FT.-3 FT. BY 3 FT. TO 4 FT. WIDE, WHITE FLOWERS, BLACK BERRIES

NOTE:

1. SUITABLE FOR USE IN PLANTER STRIPS AS SHOWN IN STANDARD DRAWINGS
4-050, 4-060, AND 4-070.

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SNOHOMISH COUNTY PUBLIC WORKS

4-040

SHRUBS AND GROUNDCOVERS

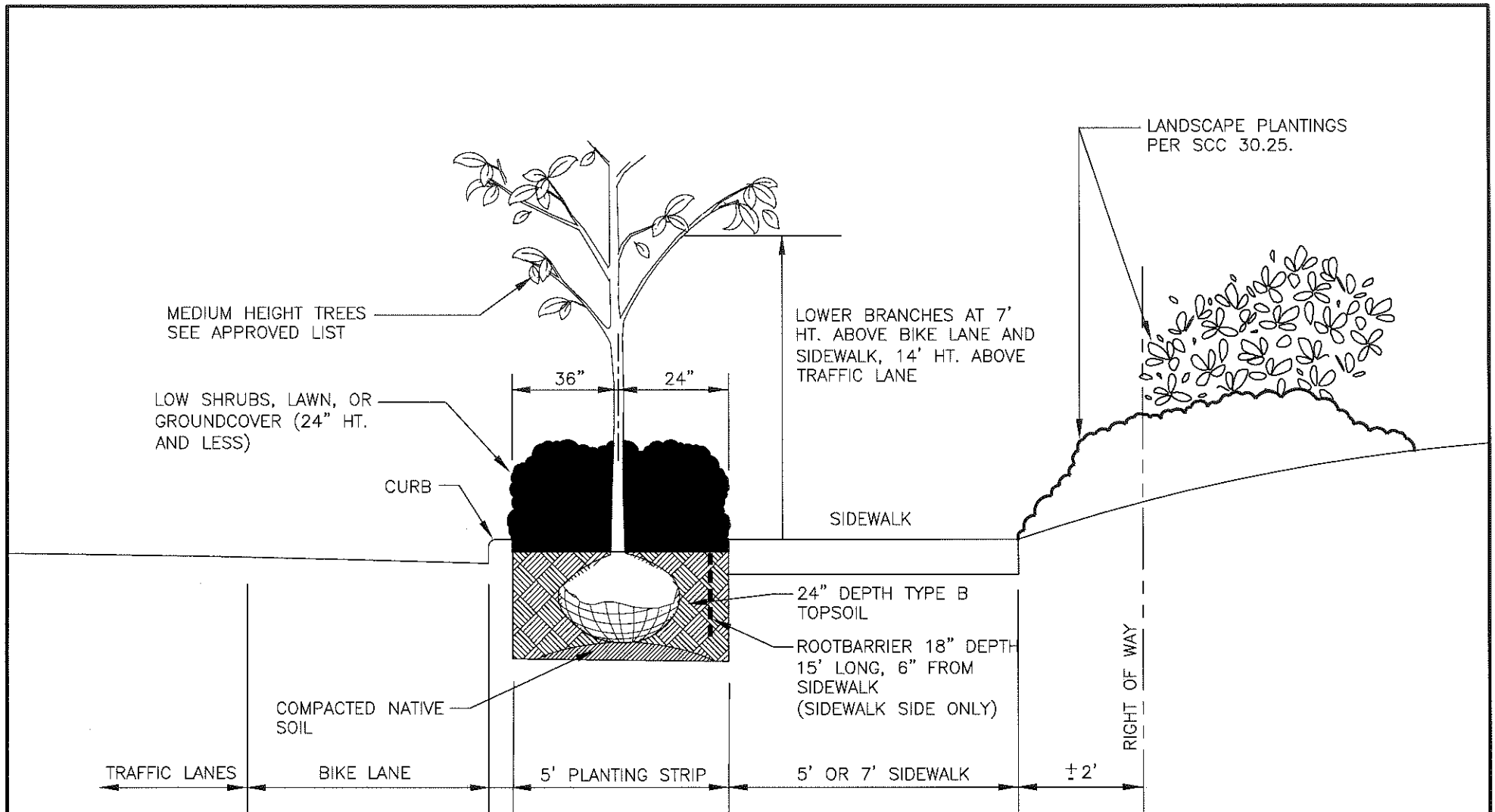
APPROVED BY:

Steven E. Monahan

COUNTY ROAD ENGINEER

2-25-03

DATE



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4-050

SNOHOMISH COUNTY PUBLIC WORKS

STANDARD PLANTING STRIP

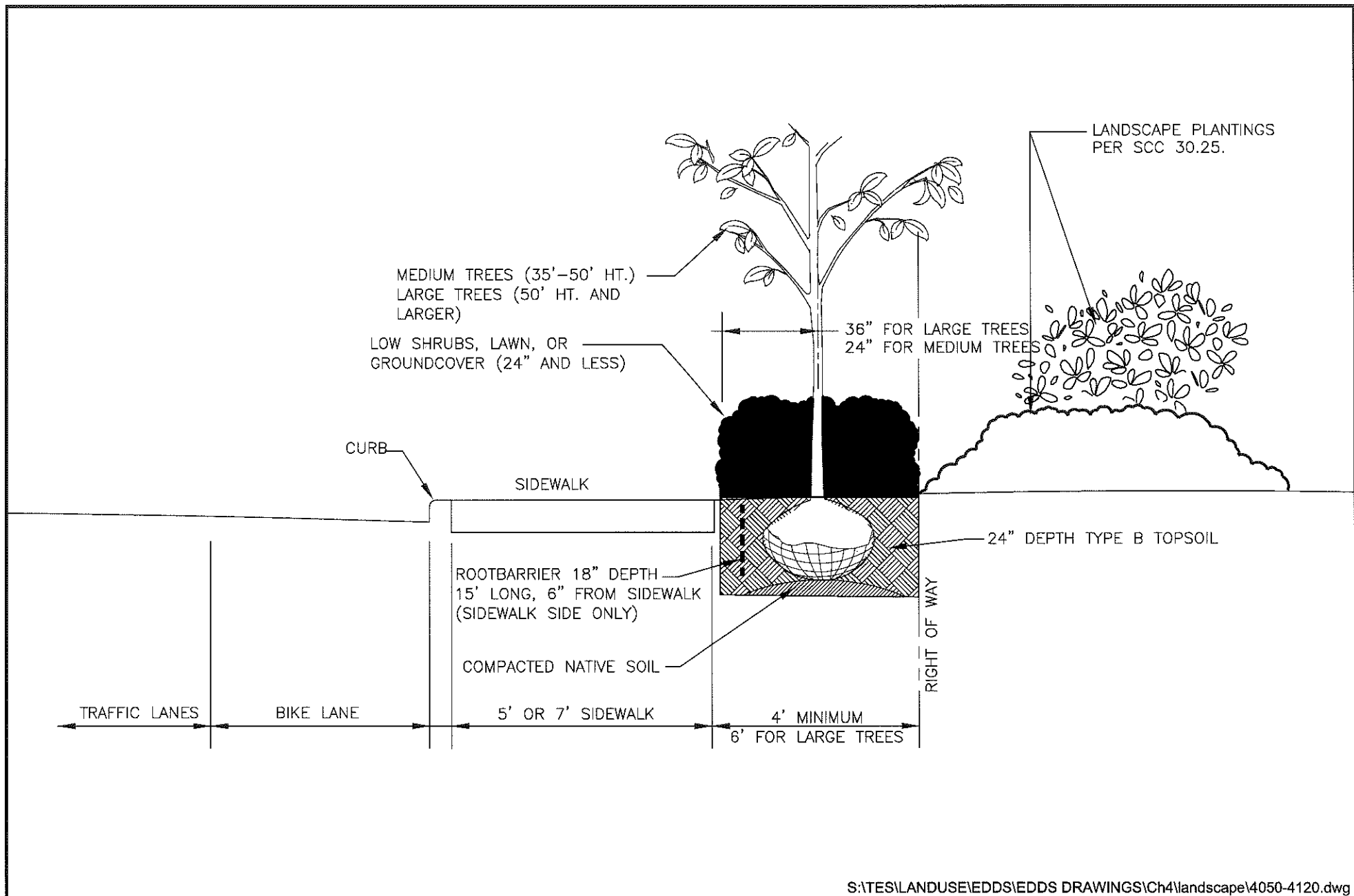
APPROVED BY:

Steve Morrison

COUNTY ROAD ENGINEER

4-17-03

DATE



SNOHOMISH COUNTY PUBLIC WORKS

4-060

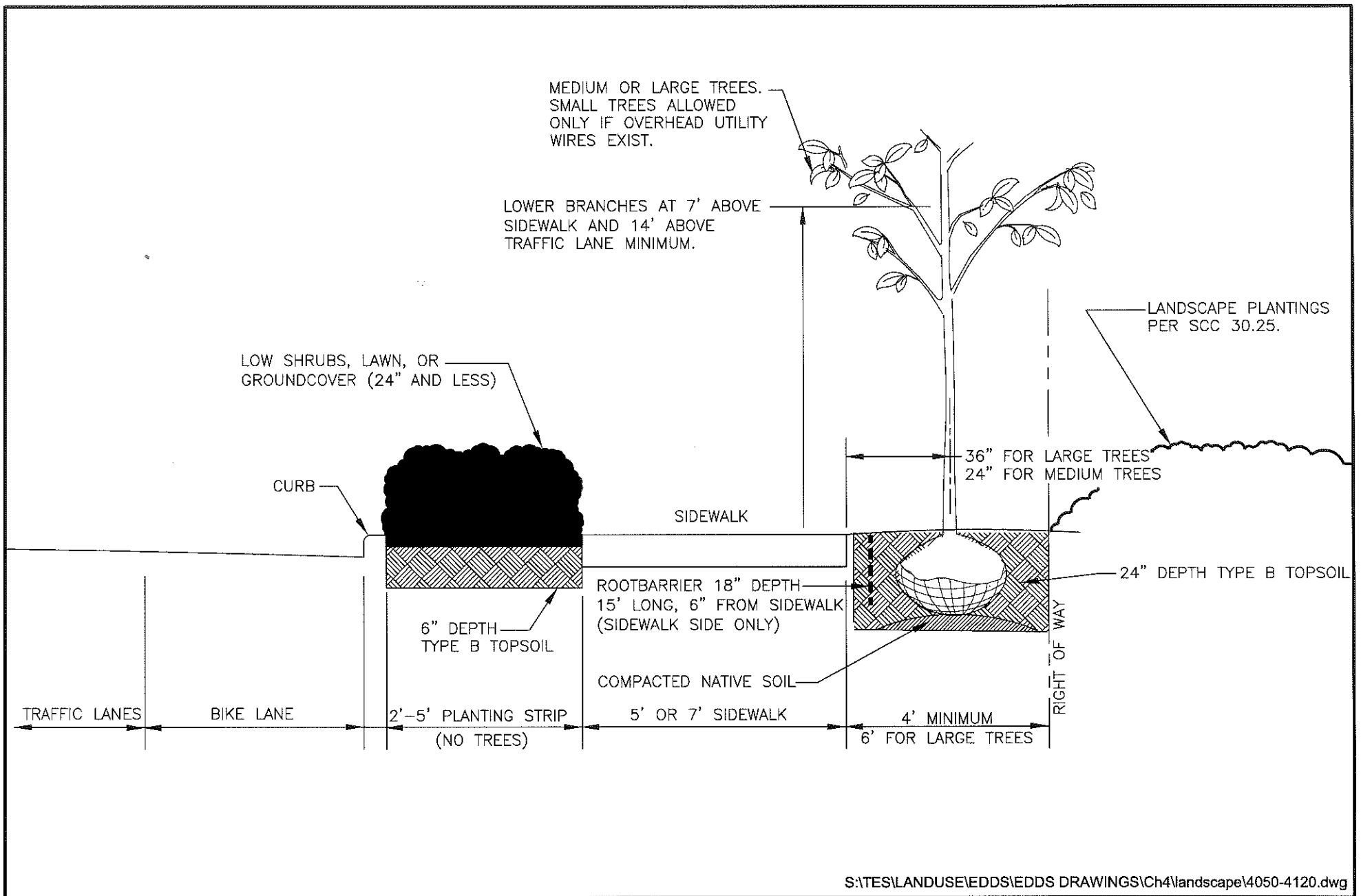
PLANTING STRIP BEHIND SIDEWALK

APPROVED BY:

Steve E. Horner 4-17-03

COUNTY ROAD ENGINEER

DATE



SNOHOMISH COUNTY PUBLIC WORKS

4-070

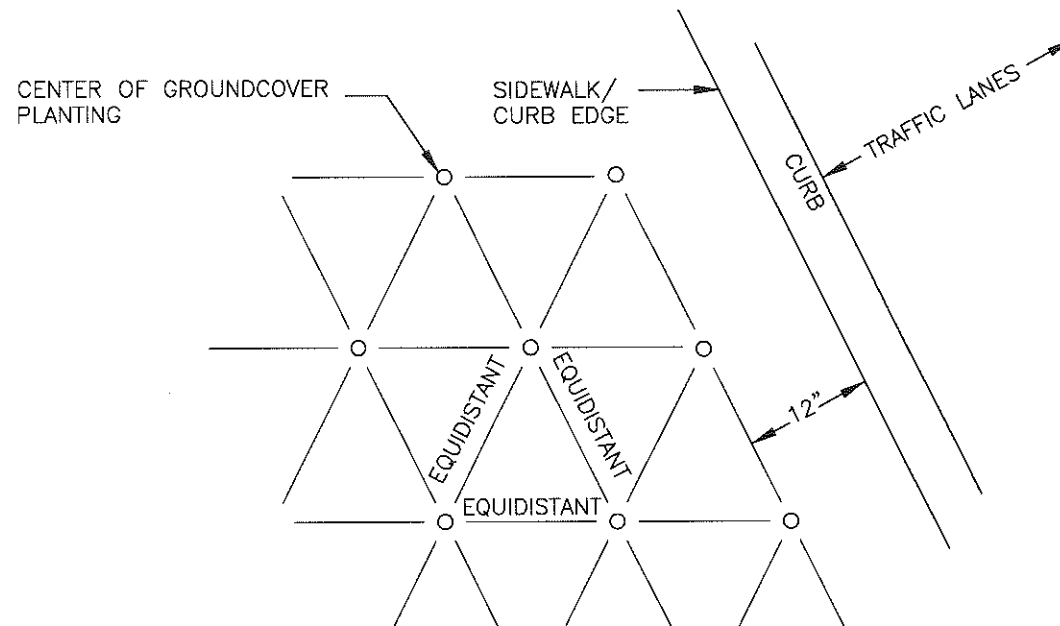
COMBINATION PLANTING STRIPS

APPROVED BY:

Stewart Morrison 4-17-03

COUNTY ROAD ENGINEER

DATE



NOTES:

1. SNOHOMISH COUNTY TO APPROVE FINAL LAYOUT BASED ON ACTUAL FIELD DIMENSIONS.
2. SEE PLANT LISTS FOR SPACING. PROVIDE 100% COVERAGE IN 3 YEARS.

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SNOHOMISH COUNTY PUBLIC WORKS

4-080

SMALL SHRUB - GROUNDCOVER SPACING

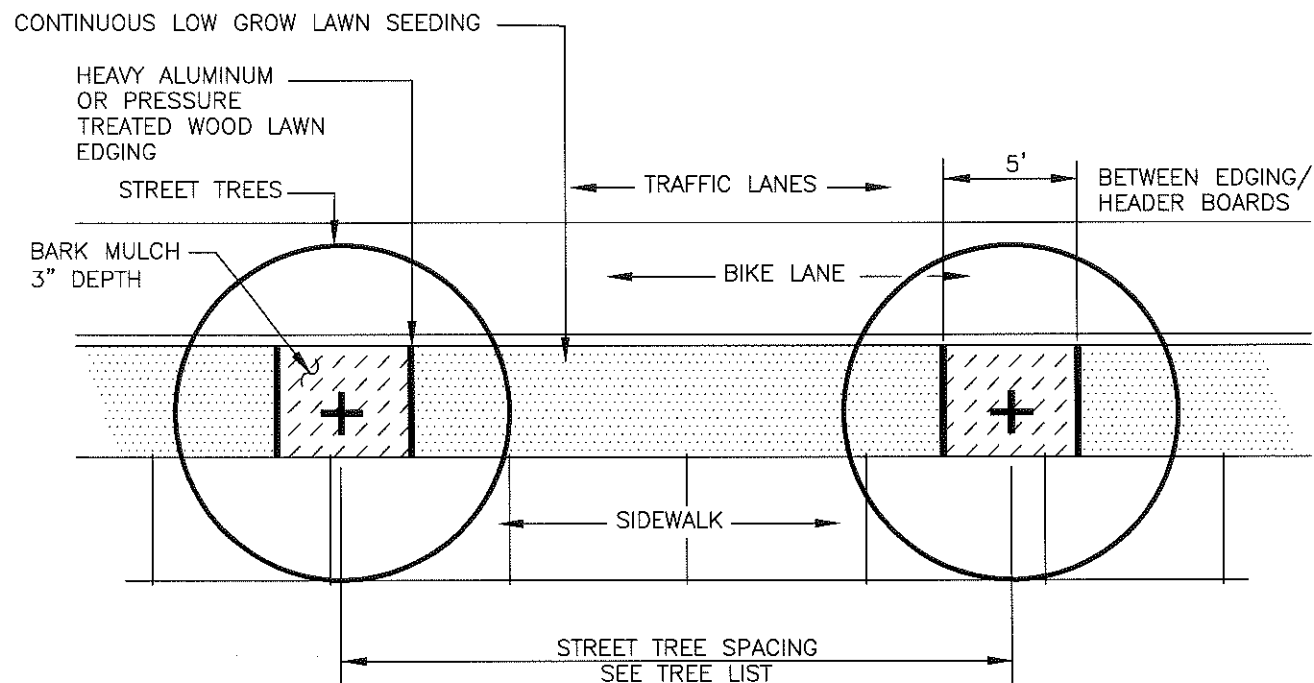
APPROVED BY:

Stefano E. Morneau

COUNTY ROAD ENGINEER

2-25-03

DATE



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SNOHOMISH COUNTY PUBLIC WORKS

4-090

TREE AND LAWN PLANTING STRIP

APPROVED BY:

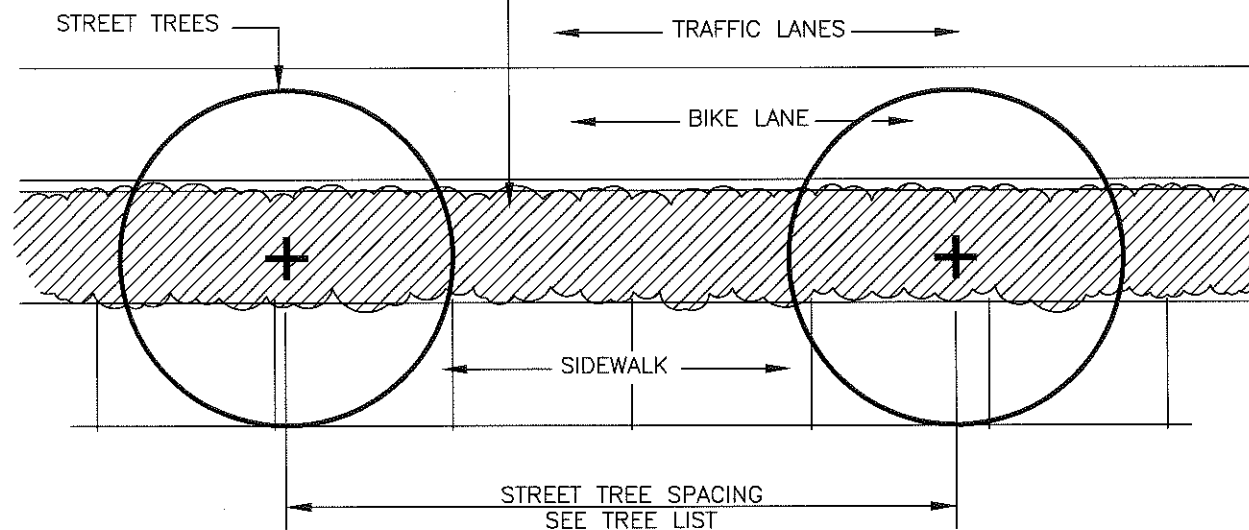
Steven C. Thompson

COUNTY ROAD ENGINEER

2-7-03

DATE

CONTINUOUS GROUNDCOVER PLANTING.
100% COVERAGE IN 3 YEARS.
SEE SPACING DETAIL AND
GROUND COVER LIST FOR APPROVED
PLANT SPECIES.



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SNOHOMISH COUNTY PUBLIC WORKS

4-100

TREE AND GROUND COVER PLANTING STRIP

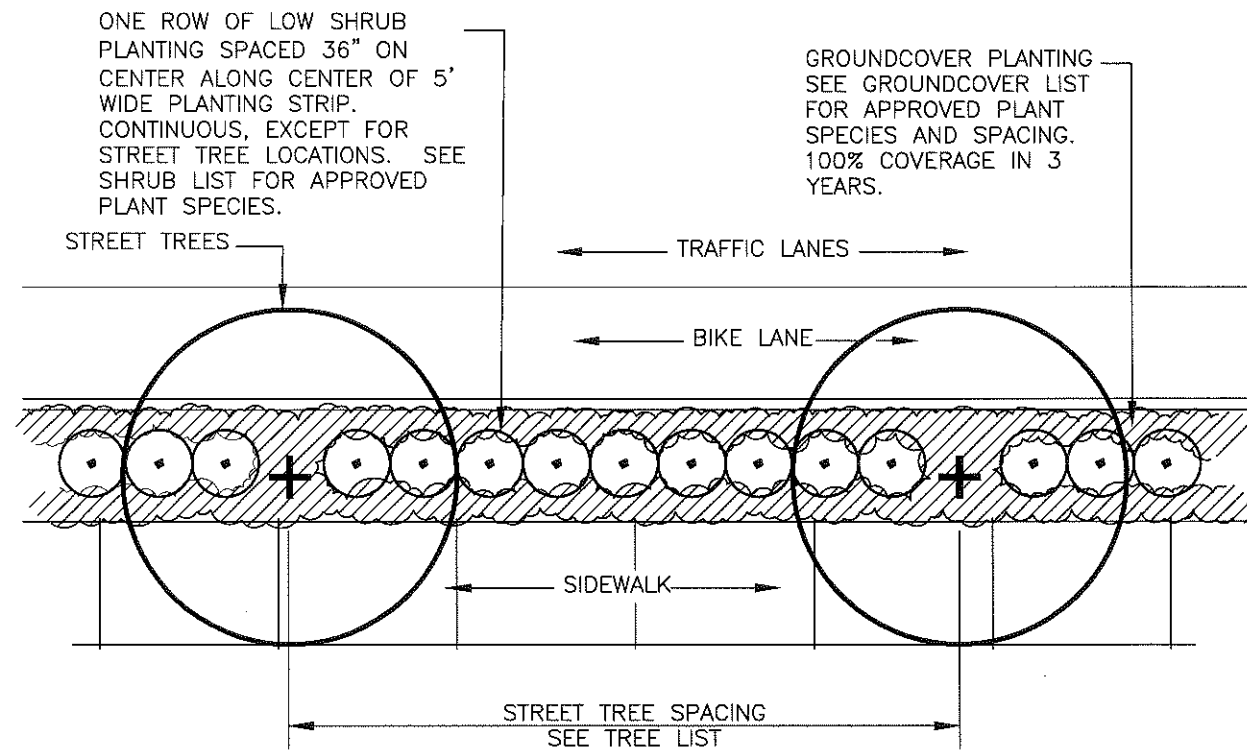
APPROVED BY:

Steve E. Thompson

COUNTY ROAD ENGINEER

2-7-03

DATE



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SNOHOMISH COUNTY PUBLIC WORKS

4-110

SHRUB, TREE, AND GROUNDCOVER PLANTING STRIP

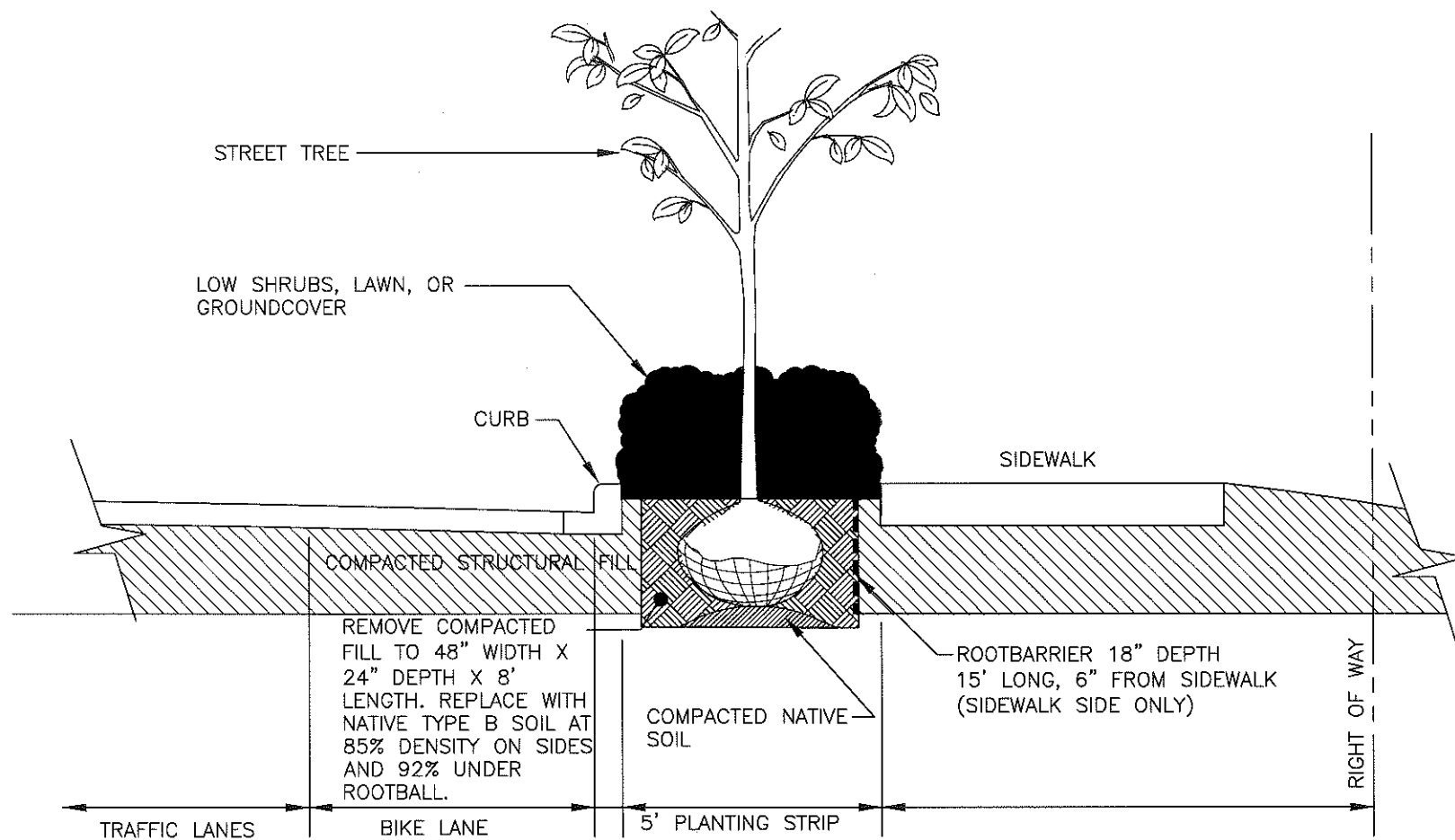
APPROVED BY:

Steve E. Norman

COUNTY ROAD ENGINEER

2-7-03

DATE



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SNOHOMISH COUNTY PUBLIC WORKS

4-120

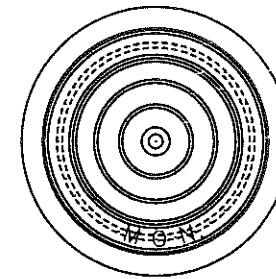
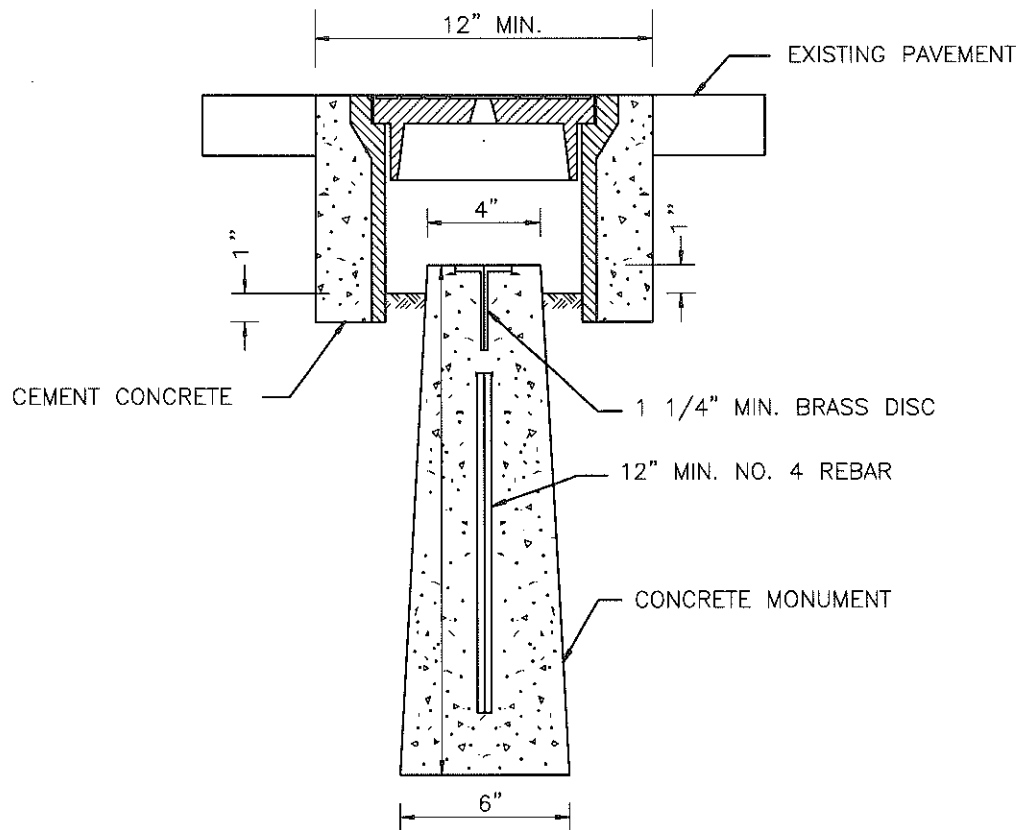
COMPACTED FILL REMOVAL / REPLACEMENT

APPROVED BY:

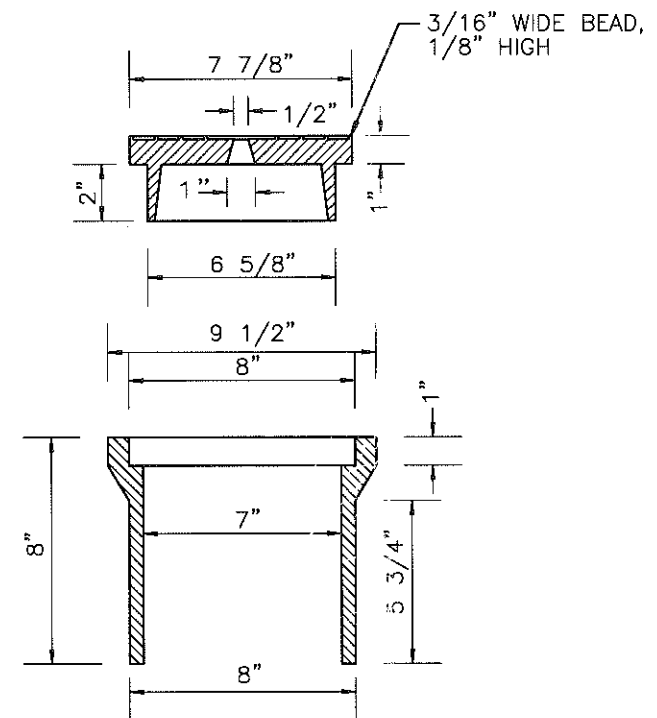
Steve E. Hornsen 2-7-03

COUNTY ROAD ENGINEER

DATE



PLAN



SECTION

NOTES:

1. THE OFF-STREET MONUMENT SHALL BE THE SAME EXCEPT USING A NO. 8 REBAR AND WITHOUT A CASE AND COVER. THE OFF-STREET MONUMENT SHALL BE 3" ABOVE GRADE.
2. MONUMENT CASE AND COVER SHALL BE CAST IRON.
3. BRASS DISC SHALL BEAR LAND SURVEYOR'S REGISTRATION NUMBER.

SEE TEXT SECTION 4-03

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SNOHOMISH COUNTY PUBLIC WORKS

4-130

MONUMENT CASE AND COVER

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Stewart E. Norman

2-25-03

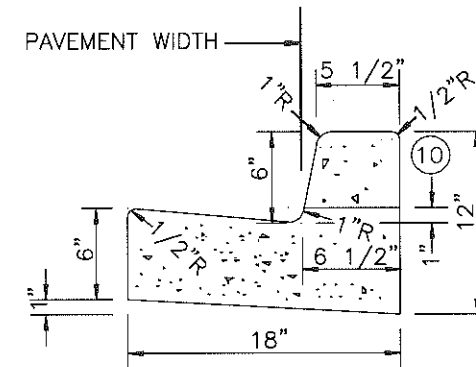
COUNTY ROAD ENGINEER

DATE

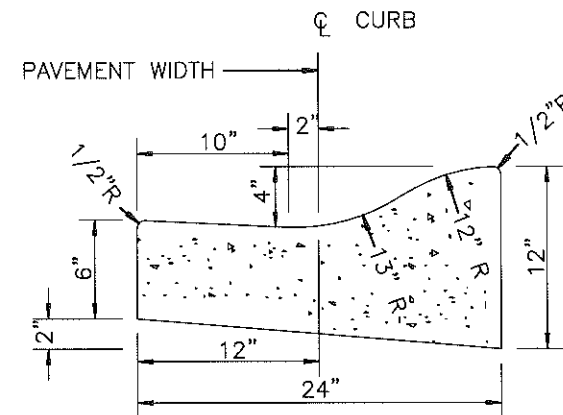
NOTES:

1. VERTICAL CURB WILL BE REQUIRED EXCEPT AS NOTED IN SECTION 4-04.
2. CONSTRUCTION OF CURB DETAILS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION AS PUBLISHED BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION AND THE AMERICAN PUBLIC WORKS ASSOCIATION. (WSDOT/APWA SPECIFICATIONS) UNLESS OTHERWISE MODIFIED BELOW.
3. ALL CONCRETE SHALL BE COMMERCIAL CLASS PER WSDOT/APWA SPECIFICATIONS.
4. FORMS SHALL BE TRUE TO LINE AND GRADE AND SECURELY STAKED. STEEL FORMS ONLY SHALL BE USED ON TANGENT SECTIONS. WOOD FORMS MAY BE USED ON CURVED SECTIONS.
5. FULL DEPTH EXPANSION JOINTS CONSISTING OF 3/8 INCH MINIMUM PREMOLDED JOINT MATERIAL SHALL BE PLACED ADJACENT TO CATCH BASINS, INLETS AND AT POINTS OF TANGENCY ON STREETS AND DRIVEWAY RETURNS. MAXIMUM SPACING SHALL BE 20 FEET.
6. CONTRACTION JOINTS (DUMMY JOINTS) CONSISTING OF 3/8" MIN. X 2" OF PREMOLDED JOINT MATERIAL SHALL BE CONSTRUCTED AT INTERVALS OF 10 FEET.
7. ALL JOINTS SHALL BE CLEAN AND EDGED.
8. FINISH SHALL BE A LIGHT BROOM FINISH.
9. FINISHED CURBS AND GUTTERS SHALL BE SPRAYED WITH A CLEAR CURING COMPOUND.
10. TOP OF CURB AT ACCESS POINT APPROACH.
11. SUBGRADE COMPACTION FOR CURBS AND GUTTERS SHALL MEET A MINIMUM 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH SEC. 2-03.3(14) OF THE WSDOT/APWA SPECIFICATIONS.

SEE TEXT SECTION 4-04



CEMENT CONCRETE
VERTICAL CURB AND GUTTER



CEMENT CONCRETE
ROLLED CURB AND GUTTER



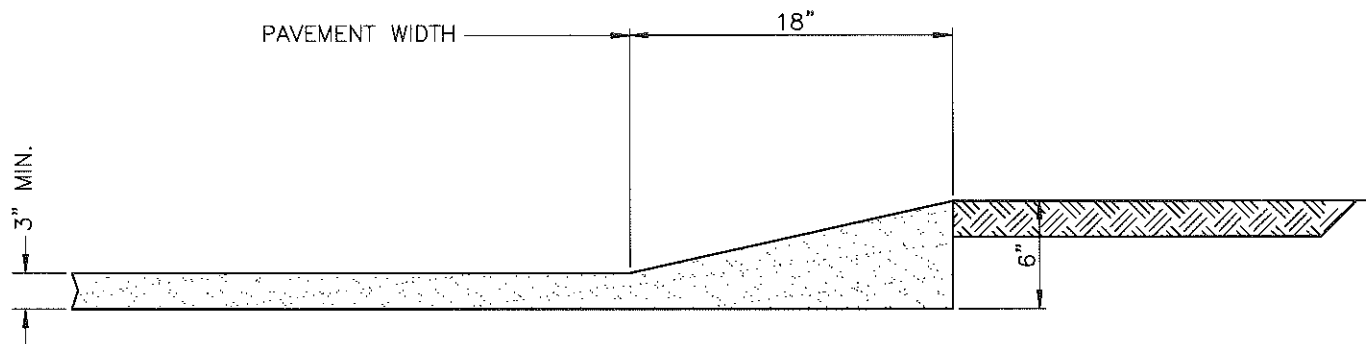
SNOHOMISH COUNTY PUBLIC WORKS

4-140

CURB DETAILS

APPROVED BY:

Steven E. Norman 10-1-04
COUNTY ROAD ENGINEER DATE

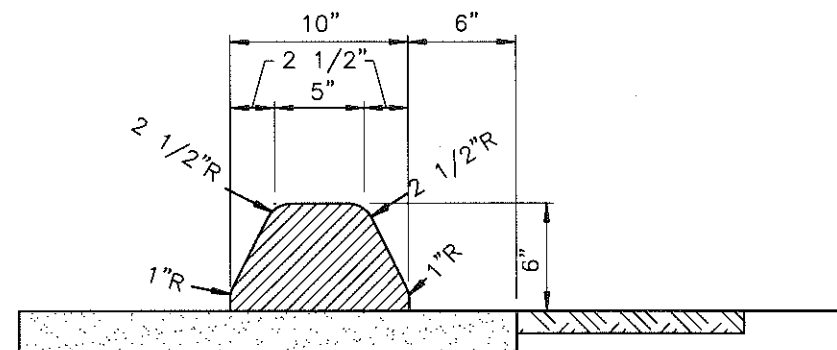


ASPHALT THICKENED
EDGE

NOTES:

1. EXTRUDED CURB SHALL BE BONDED TO THE PAVEMENT WITH TACK COAT OR SLURRY MIXTURE ADHESIVE.
2. JOINTS IN EXTRUDED CEMENT CONCRETE CURB SHALL BE CUT VERTICALLY AT 10 FOOT INTERVALS TO A MINIMUM DEPTH OF 5 INCHES. SAWED CUTS SHALL BE 1/8 INCH MINIMUM WIDTH.

SEE TEXT SECTION 4-04



EXTRUDED CURB

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SNOHOMISH COUNTY PUBLIC WORKS

4-145

CURB DETAILS

APPROVED BY:

Stewart Norman

COUNTY ROAD ENGINEER

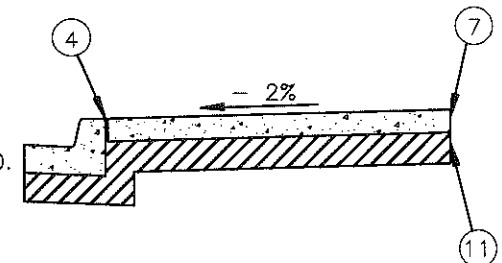
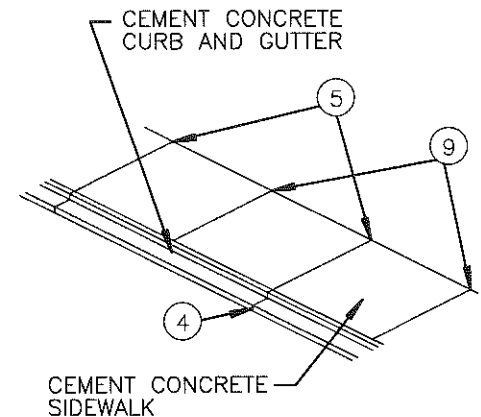
2-25-03

DATE

NOTES:

1. CONSTRUCTION OF SIDEWALKS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION AS PUBLISHED BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION AND THE AMERICAN PUBLIC WORKS ASSOCIATION (WSDOT/APWA SPECIFICATIONS) UNLESS OTHERWISE MODIFIED BELOW.
2. ALL CONCRETE SHALL BE COMMERCIAL CLASS CONCRETE PER WSDOT/APWA SPECIFICATIONS.
3. FORMS SHALL BE TRUE TO LINE AND GRADE AND SECURELY STAKED. STEEL FORMS ONLY SHALL BE USED ON TANGENT SECTIONS. WOOD FORMS MAY BE USED ON CURVED SECTIONS.
4. EXPANSION JOINTS CONSISTING OF 3/8" FULL DEPTH PREMOLDED JOINT MATERIAL SHALL BE PLACED AROUND FIRE HYDRANTS, POLES, METER BOXES AND OTHER OBSTRUCTIONS AND ALONG WALLS OR STRUCTURES IN PAVED AREAS. EXPANSION JOINTS SHALL ALSO BE PLACED AT THE BEGINNING AND THE END OF EACH CURVE, ON EACH SIDE OF STRUCTURES, DROP CURB DRIVEWAYS AND CURB RAMPs, BETWEEN SIDEWALK AND BACK OF CURB WHEN POURED SEPARATELY, AND AT OTHER LOCATIONS AS DIRECTED BY THE ENGINEER. FULL EXPANSION JOINTS SHALL GENERALLY BE PLACED TO MATCH THOSE PLACED IN ADJACENT CURB WITH A MAXIMUM SPACING OF 20 FEET.
5. CONTRACTION JOINTS (DUMMY JOINTS) CONSISTING OF 3/8" X 2" OF PREMOLDED JOINT MATERIAL SHALL BE CONSTRUCTED AT INTERVALS NOT TO EXCEED 10 FEET. WHEN SIDEWALKS ARE PLACED BY SLIP-FORMING, A PREMOLDED STRIP OF 3/8" THICK AND UP TO FULL DEPTH MAY BE USED. CONTRACTION JOINTS (DUMMY JOINTS) IN SIDEWALKS SHALL BE LOCATED SO AS TO MATCH THE JOINTS IN THE CURB WHETHER SIDEWALK IS ADJACENT TO CURB OR SEPARATED BY A PLANTING STRIP. JOINT SEALANTS FOR SAWED CONSTRUCTION JOINTS SHALL MEET THE REQUIREMENTS OF SECTION 9-04.2 OF THE WSDOT/APWA SPECIFICATIONS.
6. ALL JOINTS SHALL BE CLEAN AND EDGED.
7. CEMENT CONCRETE SIDEWALK THICKNESS IS SPECIFIED IN TEXT SECTION 4-05C. SEE ALSO STANDARD DRAWINGS 2-020 AND 2-025 FOR DRIVEWAY DETAILS.
8. THE WIDTH OF SIDEWALK SHALL BE 5 FEET MIN. FOR SINGLE FAMILY RESIDENTIAL PROPERTY USES AND 7 FEET MIN. FOR COMMERCIAL/INDUSTRIAL AND MULTI-FAMILY RESIDENTIAL PROPERTY USES.
9. SCORE MARKS, 1/4" DEEP, ARE TO BE PLACED ON 5 FOOT CENTERS, AND TO CORRESPOND TO THE MARKINGS IN EXISTING SIDEWALKS. WHEN THE SIDEWALK WIDTH EXCEEDS 6 FEET, A LONGITUDINAL SCORE AT THE CENTER OF THE SIDEWALK SHALL BE PROVIDED.
10. FINISH SHALL BE A LIGHT BROOM FINISH.
11. 6 INCHES OF GRAVEL BORROW OR EQUIVALENT. SEE STANDARD DRAWINGS 3-020, 3-050 AND SECTION 4-10.
12. SUBGRADE COMPACTION FOR SIDEWALKS SHALL MEET A MINIMUM 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH SEC. 2-03.3(14) OF THE WSDOT/APWA SPECIFICATIONS.
13. PLANTER STRIPS REQUIRED BUT NOT SHOWN. SEE STANDARD DRAWINGS 3-020 AND 3-050 FOR LOCATION OF PLANTERS.

SEE TEXT SECTION 4-05.



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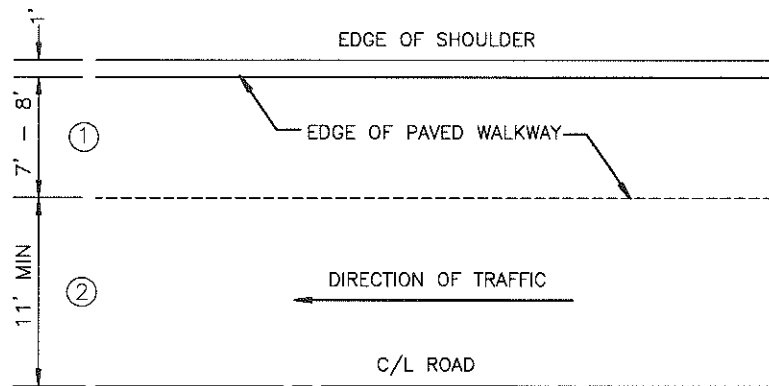
SNOHOMISH COUNTY PUBLIC WORKS

4-150

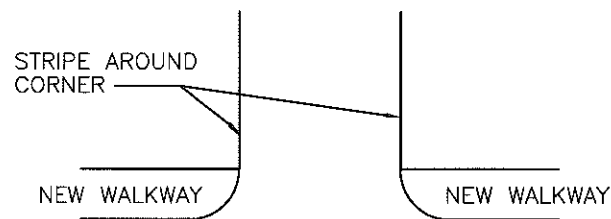
SIDEWALK DETAILS

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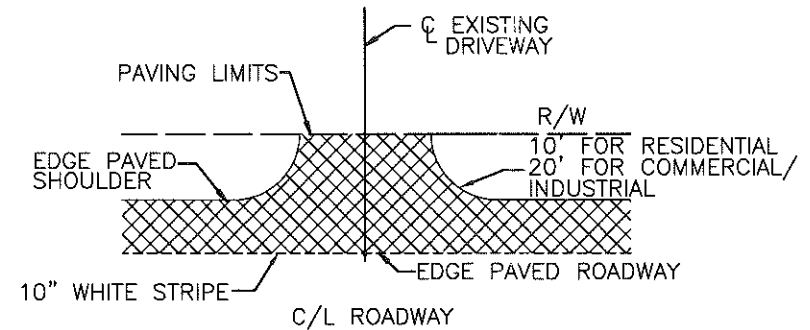
Steven E. Norman 2-25-03
COUNTY ROAD ENGINEER DATE



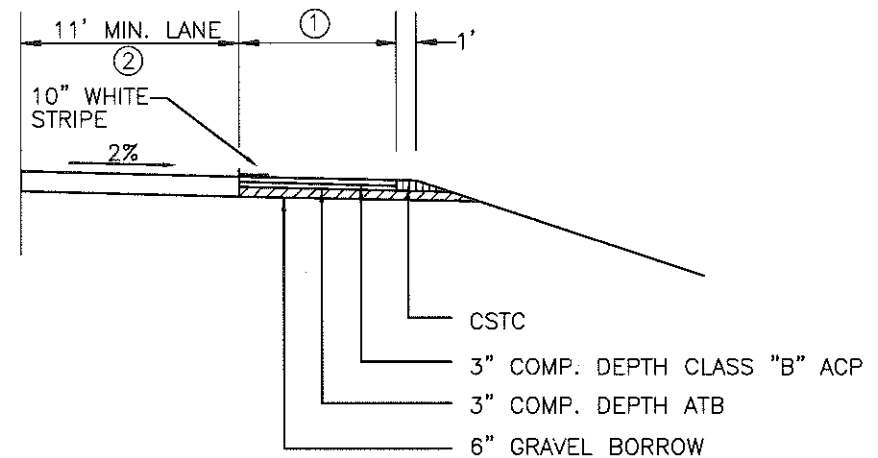
PLAN VIEW



PLACEMENT AT INTERSECTIONS



DRIVEWAY PAVING PLAN



TYPICAL NON-ARTERIAL
ROADWAY SECTION

NOTES:

- ① VARIES 7' TO 8' DEPENDING ON ROAD CLASSIFICATION.
 - ② FOR RURAL ARTERIAL. NON-ARTERIALS VARY 9' TO 11'.
- SEE TEXT SECTION 4-06

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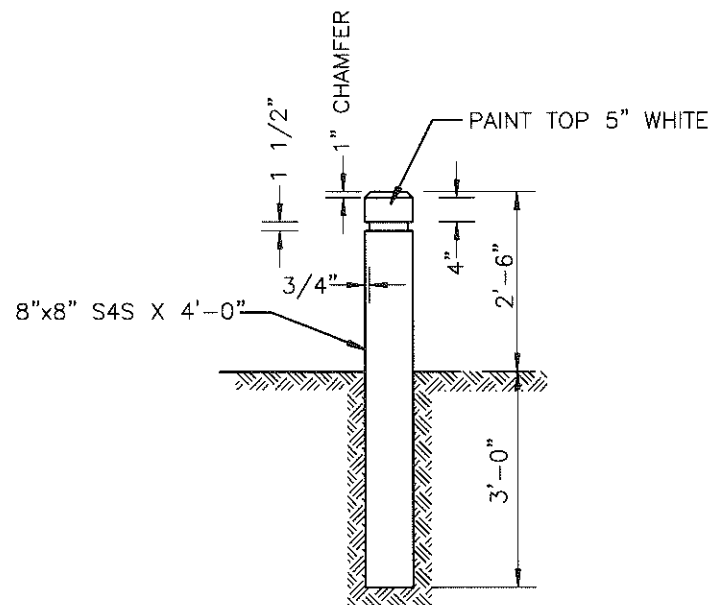
4-160

ASPHALT WALKWAY

APPROVED BY:

Steve Hornum
COUNTY ROAD ENGINEER

2-25-03
DATE

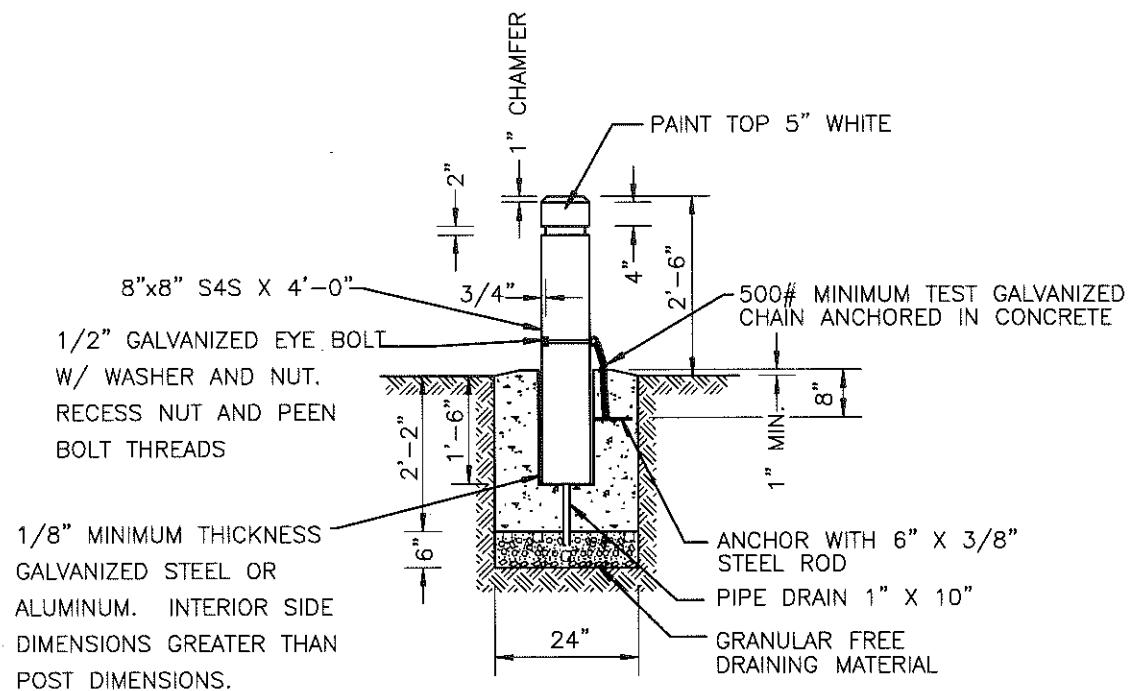


FIXED BOLLARD

NOTES:

1. ALL WOOD SHALL BE PRESSURE TREATED.
2. STEEL TUBE SHALL CONFORM TO ASTM A53 OR ASTM A53 GRADE A.
3. NUTS, BOLTS & WASHERS SHALL CONFORM TO ASTM A307.
4. ALL STEEL PARTS SHALL BE GALVANIZED.
5. COMMERCIAL CLASS CONCRETE SHALL BE USED.
6. FOR ACCEPTABLE ALTERNATE BOLLARD DESIGNS, SEE WSDOT/APWA PLANS H-13 AND H-13A.

SEE TEXT SECTION 4-11



REMOVABLE BOLLARD

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SNOHOMISH COUNTY PUBLIC WORKS

4-170

BOLLARDS

APPROVED BY:

Steve E. Hornum 225-03

COUNTY ROAD ENGINEER

DATE

BARRICADE CHARACTERISTICS

TYPE OF BARRICADE	I	II	III
WIDTH OF RAIL	8" MIN. - 12" MAX.	8" MIN. - 12" MAX.	8" MIN. - 12" MAX.
LENGTH OF RAIL	2 FT. MIN.	2 FT. MIN.	4 FT. MIN.
WIDTH OF STRIPES	6 IN.	6 IN.	6 IN.
HEIGHT	3 FT. MIN.	3 FT. MIN.	5 FT. MIN.
NUMBER OF REFLECTORIZED FACES	2 (ONE EACH DIRECTION)	4 (TWO EACH DIRECTION)	3 IF FACING TRAFFIC IN ONE DIRECTION 6 IF FACING TRAFFIC IN TWO DIRECTIONS

NOTES:

FOR WOODEN BARRICADES, NOMINAL LUMBER DIMENSIONS WILL BE SATISFACTORY.

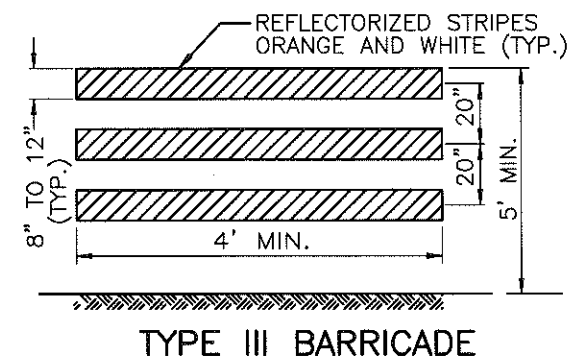
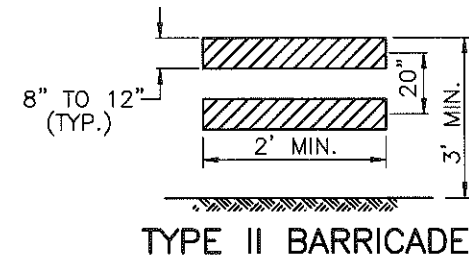
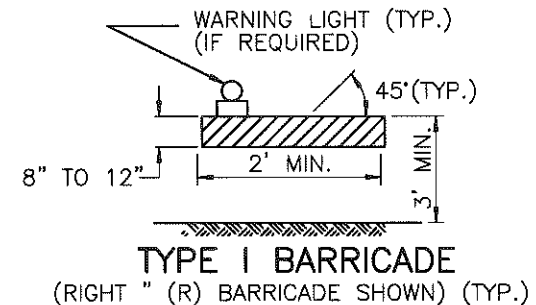
FOR RAILS LESS THAN 3- FEET LONG, 4-INCH-WIDE STRIPES SHALL BE USED.

BARRICADES INTENDED FOR USE ON EXPRESSWAYS, FREEWAYS AND OTHER HIGH SPEED ROADWAYS SHALL HAVE A MINIMUM OF 270 SQUARE INCHES OF REFLECTIVE AREA FACING TRAFFIC.

NOTES:

- BARRICADES SHALL BE INSTALLED IN ACCORDANCE WITH PART VI OF THE MUTCD.
- RAILS SHALL BE PLACED BOTH FRONT AND BACK OF BARRICADE IF REQUIRED FOR TWO-WAY TRAFFIC. RAILS SHALL BE THE SAME SIZE.
- LUMBER SHALL BE STANDARD GRADE OR BETTER.
- RIGHT (R) BARRICADES ARE PLACED TO THE RIGHT OF TRAFFIC. LEFT (L) BARRICADES ARE PLACED TO THE LEFT OF TRAFFIC.
- WHERE A BARRICADE EXTENDS ENTIRELY ACROSS A ROADWAY, THE STRIPES SHALL SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING. WHERE BOTH RIGHT AND LEFT TURNS ARE PROVIDED FOR, THE CHEVRON STRIPING SHALL SLOPE DOWNWARD IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE.
- BARRICADE RAILS SHOULD BE SUPPORTED IN A MANNER THAT WILL ALLOW THEM TO BE SEEN BY THE MOTORIST AND PROVIDE A STABLE SUPPORT NOT EASILY BLOWN OVER BY THE WIND OR TRAFFIC. BARRICADES SHOULD BE CONSTRUCTED OF LIGHTWEIGHT MATERIALS AND HAVE NO RIGID STAY BRACING FOR A-FRAME DESIGNS.

SEE TEXT SECTION 4-12



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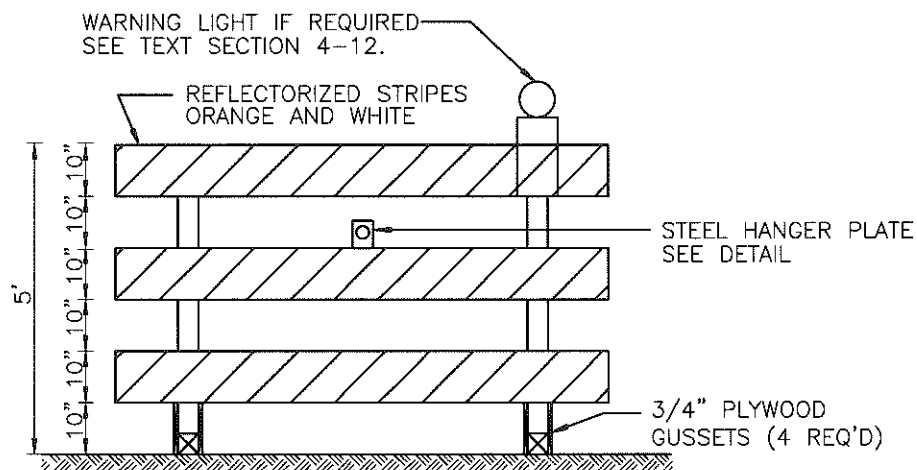
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4-180

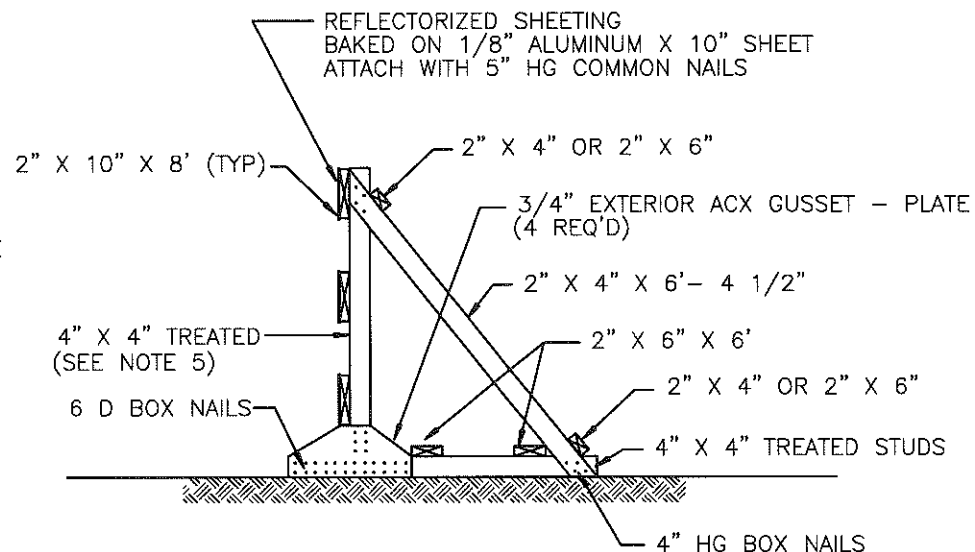
BARRICADES - GENERAL

APPROVED BY:

Steven E. Thompson 2-25-03
COUNTY ROAD ENGINEER DATE



FRONT VIEW
(RIGHT (R) BARRICADE SHOWN)

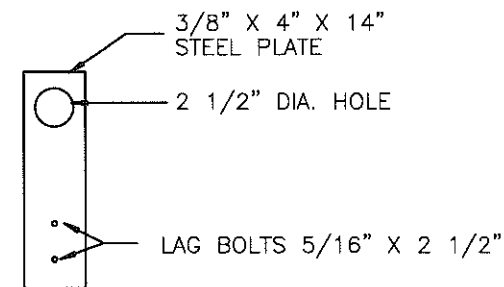


SIDE VIEW

NOTES:

1. BARRICADES SHALL BE INSTALLED IN ACCORDANCE WITH PART VI OF THE MUTCD.
2. LUMBER SHALL BE STANDARD GRADE OR BETTER.
3. RIGHT (R) BARRICADES ARE PLACED TO THE RIGHT OF TRAFFIC. LEFT (L) BARRICADES ARE PLACED TO THE LEFT OF TRAFFIC.
4. WHERE A BARRICADE(S) EXTENDS ENTIRELY ACROSS A ROADWAY, THE STRIPES SHALL SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING. WHERE BOTH RIGHT AND LEFT TURNS ARE PROVIDED, THE CHEVRON STRIPING SHALL SLOPE DOWNWARD IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE.
5. TEMPORARY BARRICADE SHOWN. FOR PERMANENT BARRICADE, DELETE SUPPORT PLATFORM AND REPLACE SUPPORT POSTS TO ENABLE A MINIMUM POST EMBEDMENT OF 3 FEET. POSTS SHALL BE PRESSURE TREATED.

SEE TEXT SECTION 4-12



STEEL HANGER PLATE
DETAIL

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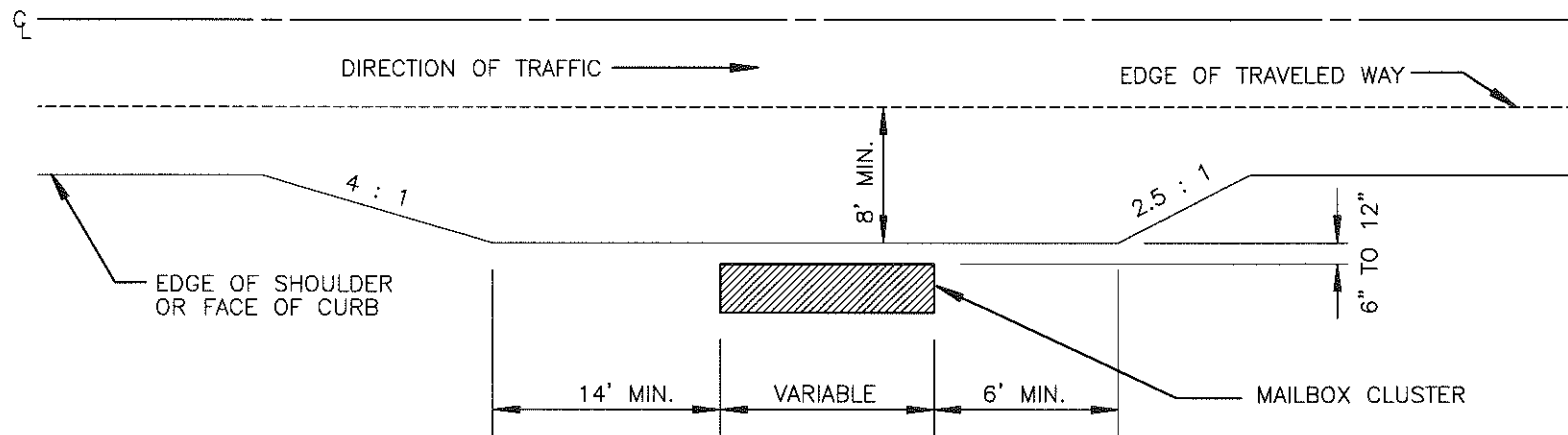
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4-185

TYPE III BARRICADE

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Steve E. Morrison 2-25-03
COUNTY ROAD ENGINEER DATE



NOTE:

1. FOR COLLECTOR AND ARTERIAL ROADS, OR ANY ROAD WITH A POSTED SPEED LIMIT OF 35 MPH OR ABOVE.

SEE TEXT SECTION 4-13

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4-190

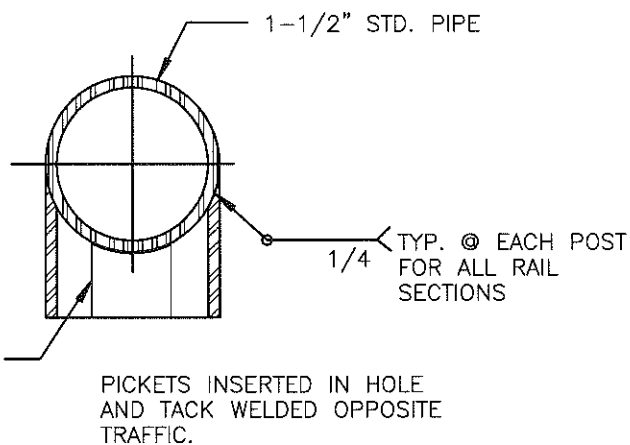
MAILBOX TURNOUT - COLLECTOR & ARTERIAL

APPROVED BY:

Steve L. Hornum 2-25-03

COUNTY ROAD ENGINEER

DATE



SEE TEXT SECTION 4-16

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SNOHOMISH COUNTY PUBLIC WORKS

4-200

PEDESTRIAN HANDRAIL DETAILS

APPROVED BY:




COUNTY ROAD ENGINEER	DATE
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PEDESTRIAN RAIL (GALV. STEEL)

GALVANIZED PEDESTRIAN RAIL SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THESE SPECIAL PROVISIONS AND STANDARD DRAWING 4-200.

GALVANIZED STEEL PEDESTRIAN RAIL SHALL CONFORM TO ASTM DESIGNATION A120. ALL WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE AWS D1.1-72. AFTER FABRICATION EACH SECTION OF RAILING SHALL BE HOT-DIPPED GALVANIZED WITH A MINIMUM ZINC COATING OF 2 OUNCES PER SQUARE FOOT. ALL BURRS AND SHARP EDGES SHALL BE REMOVED PRIOR TO GALVANIZING. FIELD WELDS SHALL BE GALVANIZED WITH "GALVALLOY" OR APPROVED EQUIVALENT. PAINTING OF WELDS WILL NOT BE PERMITTED.

HORIZONTAL RAILS AND VERTICAL SUPPORT POSTS SHALL BE 2 INCH DIAMETER AND BALUSTERS SHALL BE 1 INCH DIAMETER STANDARD WEIGHT GALVANIZED STEEL PIPE. RAILS, POSTS & BALUSTERS SHALL BE MACHINE CUT TO PROVIDE A UNIFORM LENGTH PRIOR TO ASSEMBLY.

RAILING SHALL BE ERECTED AND ADJUSTED, IF NECESSARY, TO ASSURE A CONTINUOUS LINE AND GRADE. FINISHED HEIGHT IS TO BE 42 INCHES ABOVE PEDESTRIAN SURFACE. EXPANSION JOINTS SHALL BE PROVIDED AT INTERVALS SHOWN ON THE STANDARD DRAWING.

PEDESTRIAN RAIL (ALUMINUM)

ALUMINUM PEDESTRIAN RAIL SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THESE SPECIAL PROVISIONS AND STANDARD DRAWING 4-200.

ALUMINUM PEDESTRIAN RAIL SHALL BE NATURAL ALUMINUM COLOR.

IF ANODIZATION IS SPECIFIED, ALL ALUMINUM PARTS SHALL BE GIVEN A CLEAR ANODIC COATING AT LEAST 0.0006 INCH THICK AND SHALL BE SEALED TO MEET THE REQUIREMENTS OF ASTM B 136 AND SHALL HAVE A UNIFORM FINISH.

WELDING OF ALUMINUM SHALL BE IN ACCORDANCE WITH THE "STRUCTURAL WELDING CODE- ALUMINUM, AWS D 1.2".

ALL MATERIALS USED IN THE FABRICATION OF ALUMINUM PEDESTRIAN RAIL SHALL MEET THE REQUIREMENTS OF ASTM B241 OR B429 ALLOY 6061-T6 SCHEDULE 40 (STD. PIPE).

HORIZONTAL RAILS AND VERTICAL SUPPORT POSTS SHALL BE 1.9" O.D. AND BALUSTERS SHALL BE 1.05" O.D. STANDARD WEIGHT ALUMINUM PIPE. RAILS, POSTS & BALUSTERS SHALL BE MACHINE CUT TO PROVIDE A UNIFORM LENGTH PRIOR TO ASSEMBLY.

SEE TEXT SECTION 4-16

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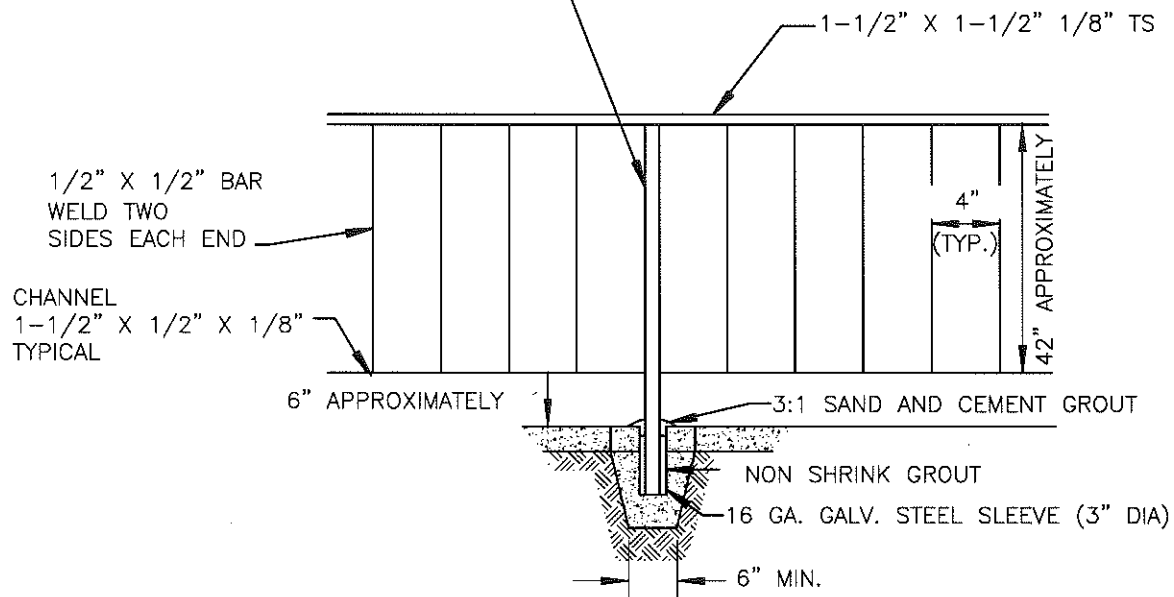
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PEDESTRIAN HANDRAIL DETAILS

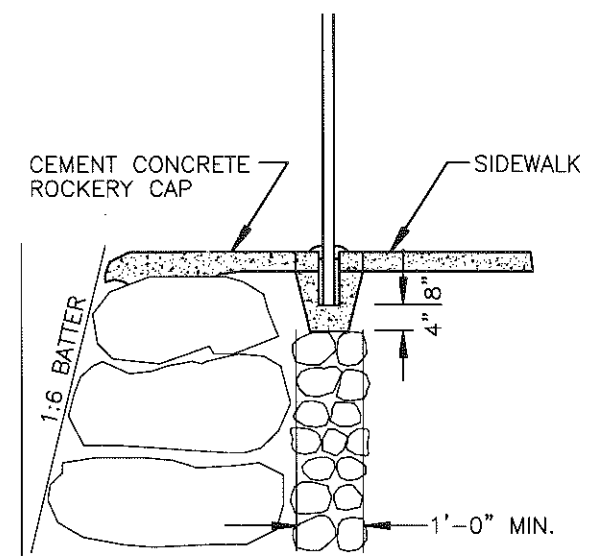
APPROVED BY:

Steven E. Thompson 2-25-03
COUNTY ROAD ENGINEER DATE

TYPICAL POST 1-1/2" X 1-1/2" X 1/8" TS
POST AT 10' INTERVALS MAX.



FRONT VIEW



SIDE VIEW

SEE STANDARD DRAWINGS
FOR ROCKERY DETAILS

NOTES:

1. AFTER FABRICATION, ALL BURRS AND SHARP EDGES SHALL BE REMOVED.
2. APPLY RUST PROOF METAL PRIMER AND ONE COAT OF BLACK ORNAMENTAL IRON METAL PAINT.

SEE TEXT SECTION 4-16

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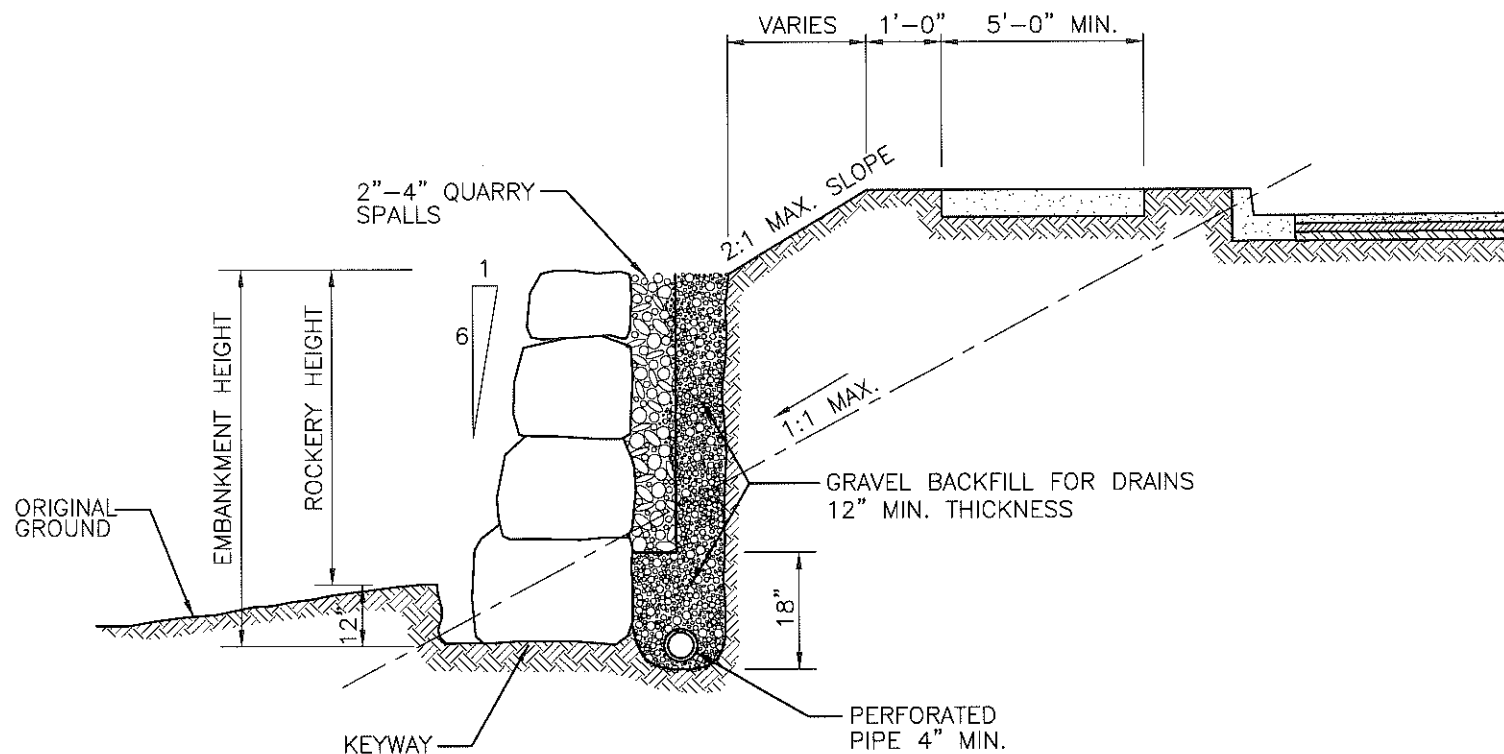
4-204

ORNAMENTAL HANDRAIL DETAILS

APPROVED BY:

Steve E. Hansen 2-25-03
COUNTY ROAD ENGINEER DATE

DATE _____



NOT TO SCALE

NOTES:

1. SEE TEXT SECTION 4-17. ROCKERIES SHALL BE DESIGNED BY A GEOTECHNICAL ENGINEER IF THE HEIGHT EXCEEDS 6 FT. IN A CUT SECTION OR 4 FT. IN A FILL SECTION.
2. GRAVEL BACKFILL SHALL MEET WSDOT/APWA STANDARD SPECIFICATION 9-03.12[4]
3. FLATTER SLOPE MAY BE REQUIRED IN LESS STABLE SOIL.
4. CHAIN LINK FENCE, TYPE NO. 4 OR 6 (WSDOT/APWA STANDARD), REQUIRED WHEN ROCKERY HEIGHT IS 3' OR HIGHER.
5. TRAFFIC BARRIERS MAY BE REQUIRED ON ROADS WITH SPEED LIMITS OF 40 MPH OR GREATER, WHERE ROCKERY HEIGHTS EXCEED 6'. SEE CHAPTER 7 OF THE WSDOT DESIGN MANUAL.

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4-220

ROCKERY, FILL SECTION

APPROVED BY:

Steve E. Thompson

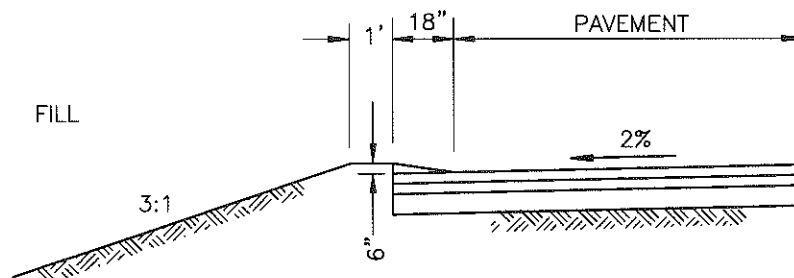
COUNTY ROAD ENGINEER

4-17-03

DATE

CHAPTER 5 DRAWING INDEX

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5-020	Interceptor Ditch and Checkdam
5-030	Yard Drain Connections
5-040	Pipe Compaction Designs and Backfill
5-050	Beveled End Section
5-060	Catchbasin Type I
5-070	Catchbasin Type 1-L
5-080	Catchbasin Type 1-P
5-090A	Catchbasin Type 2 - 48" & 54"
5-090B	Catchbasin Type 2 - 48" & 54"
5-100A	Catchbasin Type 2 - 72" & 96"
5-100B	Catchbasin Type 2 - 72" & 96"
5-110	Concrete Inlet
5-120	Catchbasin Details
5-130A	Manhole Type 1 - 48" & 54"
5-130B	Manhole Type 1 - 48" & 54"
5-140A	Manhole Type 2 - 72" & 96"
5-140B	Manhole Type 2 - 72" & 96"
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5-190	Solid Metal Cover for Catchbasin
5-200	Vaned Grate for Catchbasin and Inlet
5-210	Through Curb Inlet Frame
5-220A	Rolled Curb Frame & Grate
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5-225	Rolled Curb Vaned Grate
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5-240A	Flow Restrictor/Oil Pollution Control - T Restrictor
5-240B	Flow Restrictor/Oil Pollution Control - T Restrictor
5-240C	Oil Pollution Control Catchbasin (Added 2004 Revision)
5-250	Flow Restrictor/Oil Pollution Control - T Shear Gate Detail
5-260	Level Spreader Trench
5-270	Bubble-Up Spreader
5-280	Biofiltration Swale

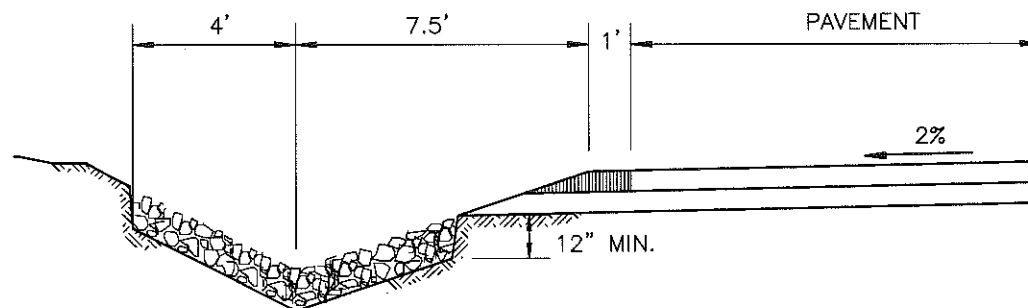


ASPHALT THICKENED EDGE
IN FILL SECTION

NOTES:

1. ASPHALT THICKENED EDGE MAY BE USED WHERE NO DITCH EXISTS OR A CLOSED DRAINAGE SYSTEM IS LOCATED BENEATH A PAVED SHOULDER.
2. A ROCK-LINED DITCH MAY BE USED FOR CHANNEL SLOPES BETWEEN 5% AND 9%.

SEE TEXT SECTION 5-03



ROCK-LINED SHOULDER DITCH
IN CUT SECTION

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SNOHOMISH COUNTY PUBLIC WORKS

5-010

SHOULDER DITCHES

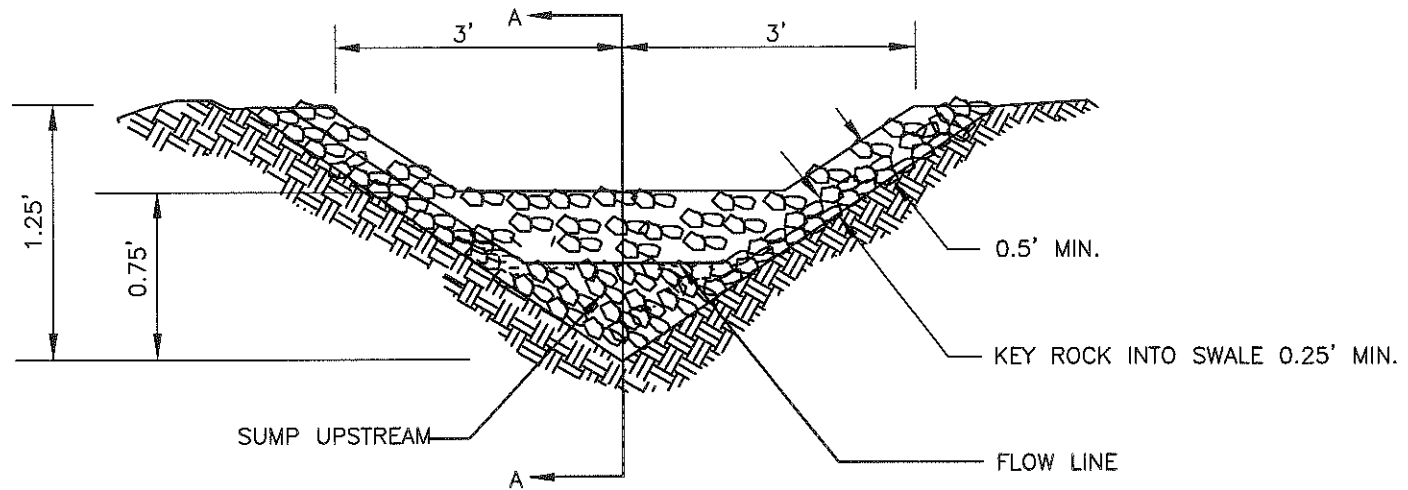
APPROVED BY:

Steven E. Norman

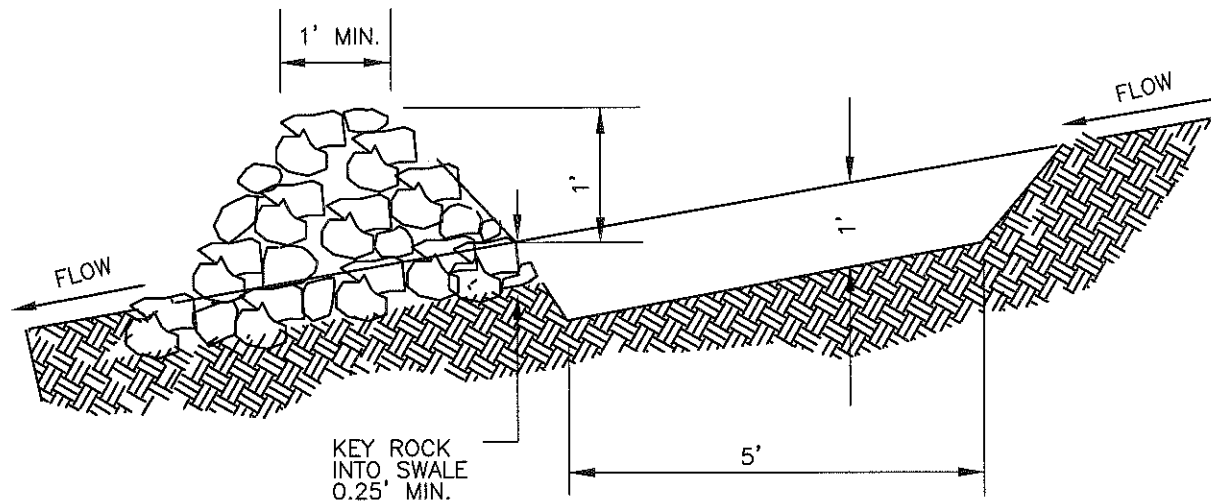
COUNTY ROAD ENGINEER

2-25-03

DATE



TYPICAL CROSS SECTION



SECTION A-A

SEE TEXT SECTION 5-03

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SNOHOMISH COUNTY PUBLIC WORKS

5-020

INTERCEPTOR DITCH AND CHECKDAM

APPROVED BY:

Stuart E. Norman

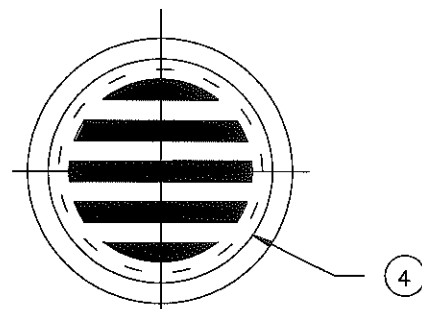
2-7-03

COUNTY ROAD ENGINEER

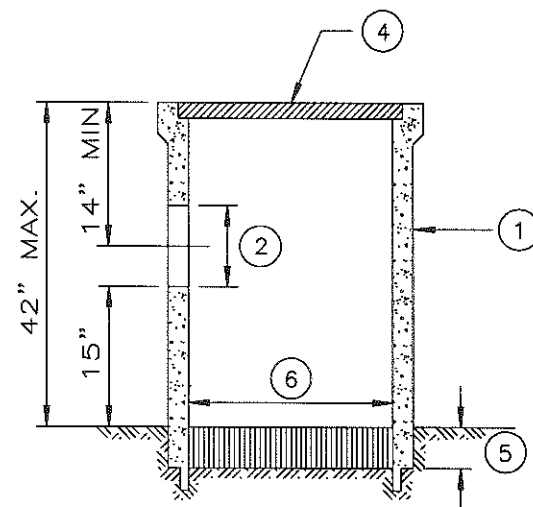
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NOTES:

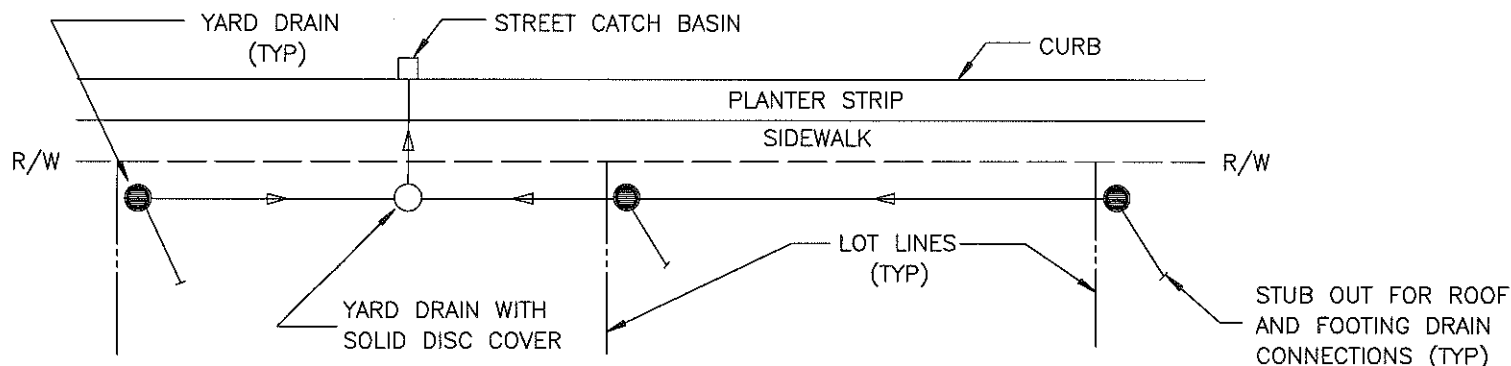
1. YARD DRAINS TO BE CONSTRUCTED FROM CONCRETE PIPE OR HDPE N-12 IN ACCORDANCE WITH ASTM C 14.
 2. CUTOUT HOLE SIZE IS EQUAL TO OUTLET PIPE OUTSIDE DIAMETER PLUS YARD DRAIN WALL THICKNESS.
 3. CONNECTION TO OUTLET PIPE TO BE MORTARED AND MADE FLUSH WITH INSIDE OF THE YARD DRAIN WALL.
 4. CAST IRON BELL GRATE. FITS INTO BELL RECESS AND EXTENDS FLUSH WITH FACE OF BELL. THE GRATE SHALL HAVE SLOTS (HOLES) THAT CONSTITUTE 50 PERCENT OPEN AREA FOR DRAINAGE. INLET BELL SURFACE SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
 5. WASHED DRAIN ROCK. 6 INCHES MINIMUM DEPTH.
 6. VARIES 12 INCHES OR 18 INCHES.
 7. SPECIAL CAST YARD DRAIN MAY BE REQUIRED FOR MULTIPLE PIPE CONNECTIONS.
 8. CLEAN OUTS ARE REQUIRED FOR DEPTHS OVER 42 INCHES.
- SEE TEXT SECTION 5-04.



PLAN VIEW



ELEVATION VIEW



TYPICAL LOT PLACEMENT

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SNOHOMISH COUNTY PUBLIC WORKS

5-030

YARD DRAIN CONNECTIONS

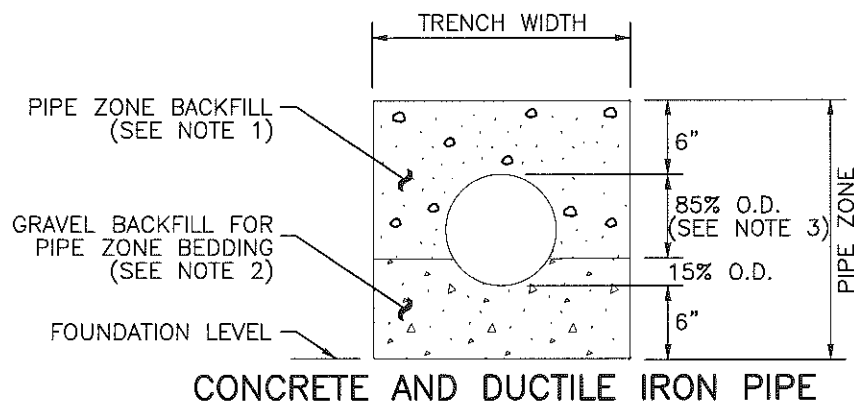
APPROVED BY:

Steven E. Thomas

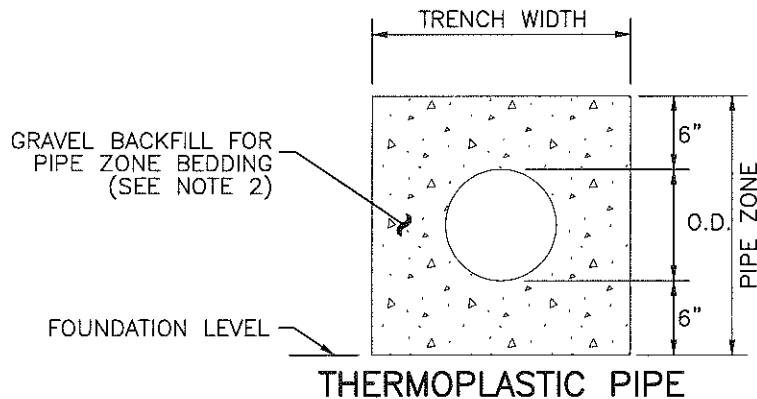
COUNTY ROAD ENGINEER

2-7-03

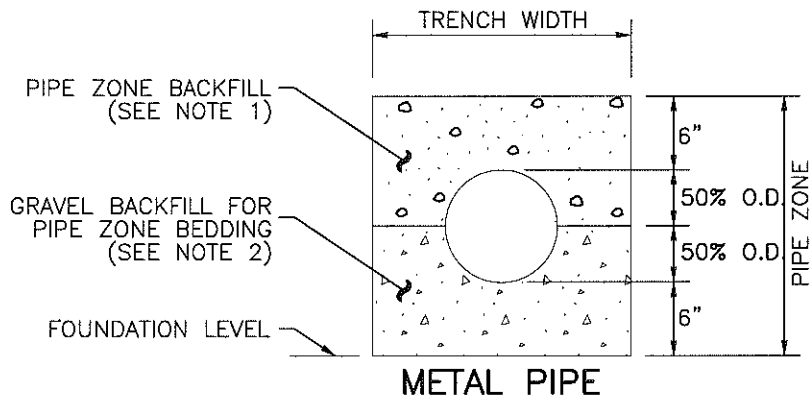
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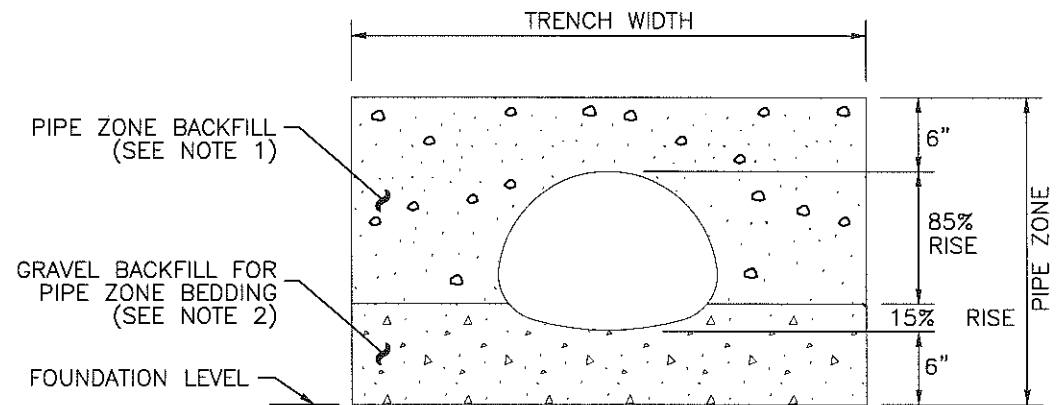
CONCRETE AND DUCTILE IRON PIPE



THERMOPLASTIC PIPE



METAL PIPE



PIPE ARCHES

CLEARANCE BETWEEN PIPES FOR MULTIPLE INSTALLATIONS

PIPE	SIZE	MINIMUM DISTANCE BETWEEN BARRELS
CIRCULAR PIPE (DIAMETER)	12" to 24" 30" to 96" 102" to 180"	12" DIAM./2 48"
PIPE ARCH METAL ONLY (SPAN)	18" to 36" 43" to 142" 148" to 200"	12" SPAN/3 48"

NOTES:

1. SEE WSDOT/APWA STANDARD SPECIFICATIONS SECTION 7-08.3(3) FOR PIPE ZONE BACKFILL.
2. SEE STANDARD SPECIFICATIONS SECTION 9-03.12(3) FOR GRAVEL BACKFILL FOR PIPE ZONE BEDDING
3. FOR SANITARY SEWER INSTALLATION, CONCRETE PIPE SHALL BE BEDDED TO SPRING LINE.

SEE TEXT SECTION 5-04.

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SNOHOMISH COUNTY PUBLIC WORKS

5-040

PIPE COMPACTION DESIGNS AND BACKFILL

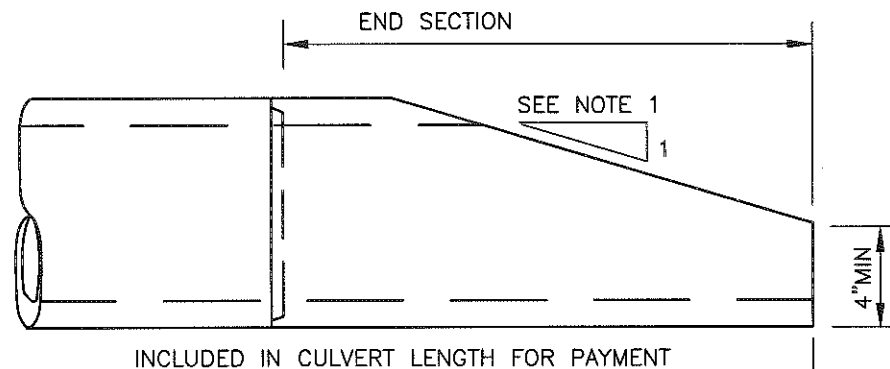
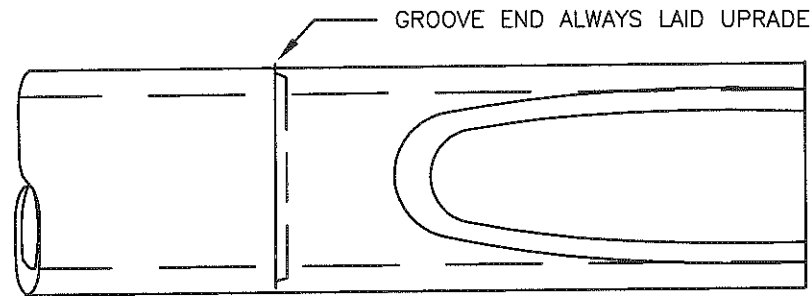
APPROVED BY:

Steven C. Thomas

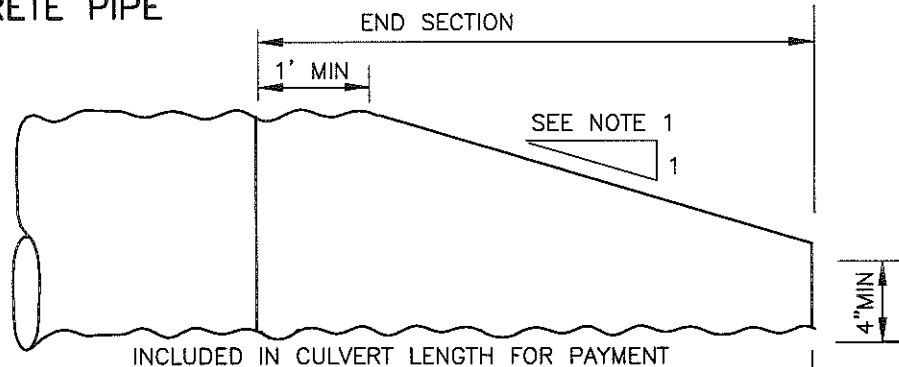
COUNTY ROAD ENGINEER

2-25-03

DATE



CONCRETE PIPE



METAL PIPE

NOTES:

1. THE CULVERT ENDS SHALL BE BEVELED TO MATCH THE SIDE SLOPE. FIELD CUT OF CULVERT ENDS IS PERMITTED, WHEN APPROVED BY THE ENGINEER.
2. ALL FIELD CUT CULVERT SHALL BE TREATED WITH TREATMENT AS SPECIFIED IN THE WSDOT/APWA SPECIFICATIONS.
3. CORRUGATED POLYETHYLENE PIPE IS PERMITTED WHEN BEVELED SLOPES ARE 4:1 OR STEEPER. FOR ANY PIPE SECTION THAT IS BEVELED ON THE END, THE MINIMUM LENGTH OF THE UNBEVELED PORTION OF THE PIPE SHALL BE 6 FEET.

SEE TEXT SECTION 5-04

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SNOHOMISH COUNTY PUBLIC WORKS

5-050

BEVELED END SECTION

APPROVED BY:

Steve E. Thomas

COUNTY ROAD ENGINEER

2-7-03

DATE

NOTES:

1. CATCHBASINS TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C 478 (AASHTO M 199) & ASTM C 890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA SPECIFICATIONS.

2. REINFORCING SHALL BE EQUIVALENT TO WELDED WIRE FABRIC HAVING A MINIMUM AREA OF 0.12 SQUARE INCHES PER FOOT. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A 497 (AASHTO M221). WIRE FABRIC SHALL NOT BE PLACED IN THE KNOCKOUTS.

3. THE BOTTOM OF THE PRECAST BASE SECTION MAY BE ROUNDED.

4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.

5. KNOCKOUTS MAY BE ON ALL 4 SIDES WITH MAXIMUM DIAMETER OF 20". KNOCKOUTS MAY BE EITHER ROUND OR "D" SHAPED. PIPE TO BE INSTALLED IN FACTORY SUPPLIED KNOCKOUTS.

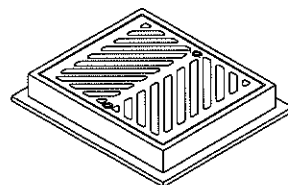
6. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS CONCRETE INLET WALL THICKNESS.

7. THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2" PER FT.

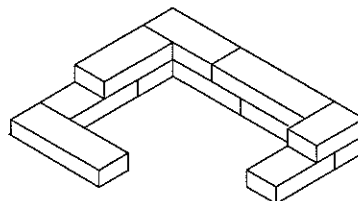
8. CONCRETE INLET FRAME AND GRATE SHALL BE IN ACCORDANCE WITH THE WSDOT/APWA SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT.

9. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.

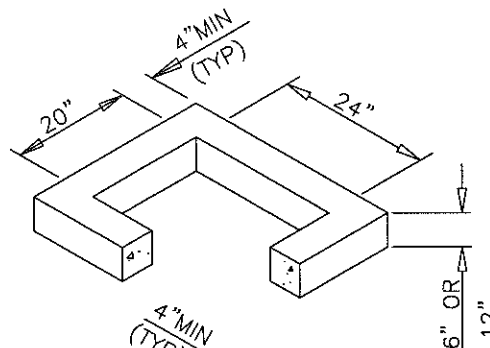
SEE TEXT SECTION 5-06
WSDOT/APWA PLAN 1-A



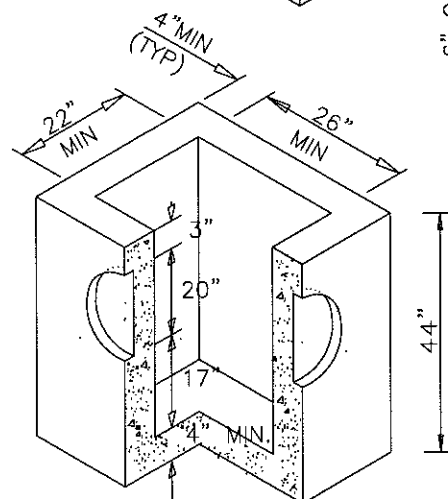
LOCKING FRAME AND GRATE
(SEE STD DWG 5-180 FOR
DETAILS)



2"x4"x8" SOLID BRICK USED
FOR FINAL ADJUSTMENT TO
GRADE. 6" HIGH MAX.



6" OR 12" CONCRETE
RISER SECTION CLASS
4000 CONCRETE



PRECAST BASE SECTION
(MEASUREMENT AT THE TOP
OF THE BASE)

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SNOHOMISH COUNTY PUBLIC WORKS

5-060

CATCHBASIN TYPE 1

APPROVED BY:

Steve C. Norman

2-7-03

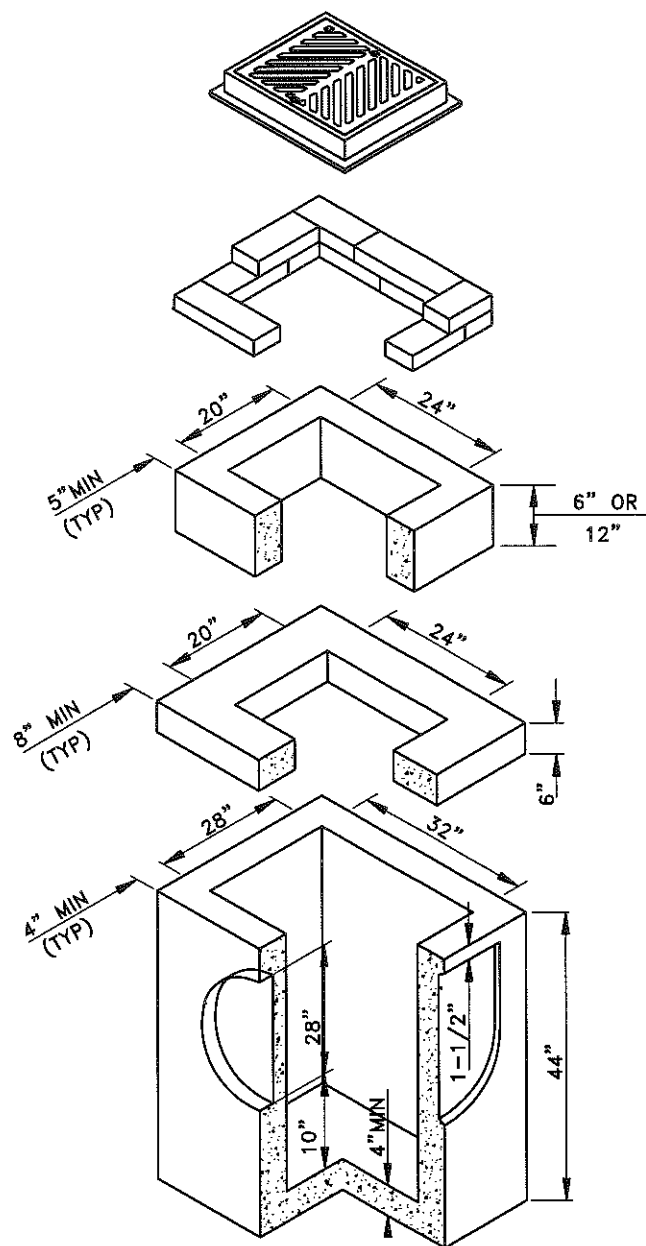
COUNTY ROAD ENGINEER

DATE

NOTES:

1. CATCHBASINS TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C 478 (AASHTO M 199) & ASTM C 890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA SPECIFICATIONS.
2. REINFORCING SHALL BE EQUIVALENT TO WELDED WIRE FABRIC HAVING A MINIMUM AREA OF 0.12 SQUARE INCHES PER FOOT. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A 497 (AASHTO M221). WIRE FABRIC SHALL NOT BE PLACED IN THE KNOCKOUTS.
3. THE BOTTOM OF THE PRECAST BASE SECTION MAY BE ROUNDED.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
5. KNOCKOUTS MAY BE ON ALL 4 SIDES WITH MAXIMUM DIAMETER OF 28". KNOCKOUTS MAY BE EITHER ROUND OR "D" SHAPED. PIPE TO BE INSTALLED IN FACTORY SUPPLIED KNOCKOUTS.
6. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS CONCRETE INLET WALL THICKNESS.
7. THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2" PER FT.
8. CONCRETE INLET FRAME AND GRATE SHALL BE IN ACCORDANCE WITH THE WSDOT/APWA SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT.
9. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.

SEE TEXT SECTION 5-06
WSDOT/APWA PLAN 1-A



LOCKING FRAME AND GRATE
(SEE STD DWG 5-180 FOR DETAILS)

2"X4"X8" SOLID BRICK
USED FOR FINAL ADJUSTMENT
TO GRADE. 6" HIGH MAX.

6" OR 12" CONCRETE
RISER SECTION
CLASS 4000 CONCRETE

6" CONCRETE
REDUCING TOP SLAB
CLASS 4000 CONCRETE

PRECAST BASE SECTION
(MEASUREMENT AT THE TOP
OF THE BASE)

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SNOHOMISH COUNTY PUBLIC WORKS

5-070

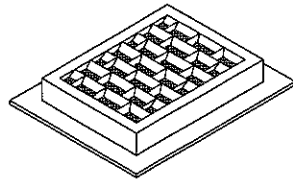
CATCHBASIN TYPE 1-L

APPROVED BY:

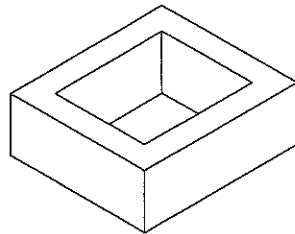
Stewart E. Hornum 2-7-03

COUNTY ROAD ENGINEER

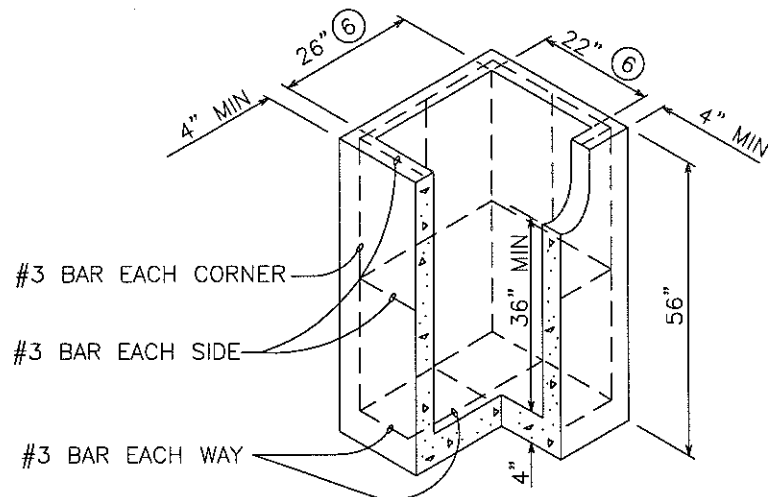
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FRAME AND VANED GRATE



RECTANGULAR ADJUSTMENT SECTION



PRECAST BASE SECTION

NOTES:

1. AS AN ACCEPTABLE ALTERNATE TO REBAR, WIRE MESH HAVING A MINIMUM AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WIRE MESH SHALL NOT BE PLACED IN KNOCKOUTS.
2. THE KNOCKOUT DIAMETER SHALL NOT BE GREATER THAN 16". KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM TO 2 1/2" MAXIMUM.
3. THE MAXIMUM DEPTH FROM THE FINISHED GRADE TO THE PIPE INVERT SHALL BE 5'.
4. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO ADJUSTMENT SECTION.
5. THE PRECAST BASE SECTION MAY HAVE A ROUNDED FLOOR AND THE WALLS MAY BE SLOPED AT A RATE OF 1:24 OR STEEPER.
6. OPENINGS SHALL BE MEASURED AT THE TOP OF THE PRECAST BASE SECTION.

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SNOHOMISH COUNTY PUBLIC WORKS

5-080

CATCHBASIN TYPE 1-P

APPROVED BY:

Stuart E. Hornum

COUNTY ROAD ENGINEER

2-7-03

DATE

NOTES

1. CATCHBASINS TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C 478 (AASHTO M 199) & ASTM C 890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA SPECIFICATIONS.
2. HANDHOLDS IN RISER OR ADJUSTMENT SECTION SHALL HAVE A 3" MINIMUM CLEARANCE. STEPS IN CATCHBASIN SHALL HAVE 6" MINIMUM CLEARANCE. NO STEPS ARE REQUIRED WHEN "B" IS 4' OR LESS.
3. ALL REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. ALL PRECAST CONCRETE SHALL OBTAIN 4000 PSI @ 28 DAYS.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS CATCHBASIN WALL THICKNESS. MAXIMUM HOLE SIZE IS 36" FOR 48" CATCHBASIN, 42" FOR 54" CATCHBASIN. MINIMUM DISTANCE BETWEEN HOLES IS 8".
6. FRAME AND GRATE OR RING AND COVER SHALL BE IN ACCORDANCE WITH WSDOT/APWA SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION 44-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT.
7. ALL BASE REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 60,000 PSI AND BE PLACED IN THE UPPER HALF OF THE BASE WITH 1" MINIMUM CLEARANCE.
8. THE BOTTOM OF THE PRECAST CATCHBASIN MAY BE ROUNDED.
9. FOR DETAILS SHOWING FRAME AND GRATE, RING AND COVER SEE STANDARD DRAWING 5-180, "METAL FRAME AND GRATE (20X24)" OR STANDARD DRAWING 5-230, "MANHOLE RING AND COVER".
10. FOR DETAILS SHOWING LADDER, STEPS, HANDRAIL AND TOP SLAB SEE STANDARD DRAWING 5-120, "CATCHBASIN DETAILS".
11. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.

WSDOT/APWA PLAN B-1e.

SEE TEXT SECTION 5-07

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SNOHOMISH COUNTY PUBLIC WORKS

5-090A

CATCHBASIN TYPE 2 - 48" & 54"

APPROVED BY:

Steven E. Hornum

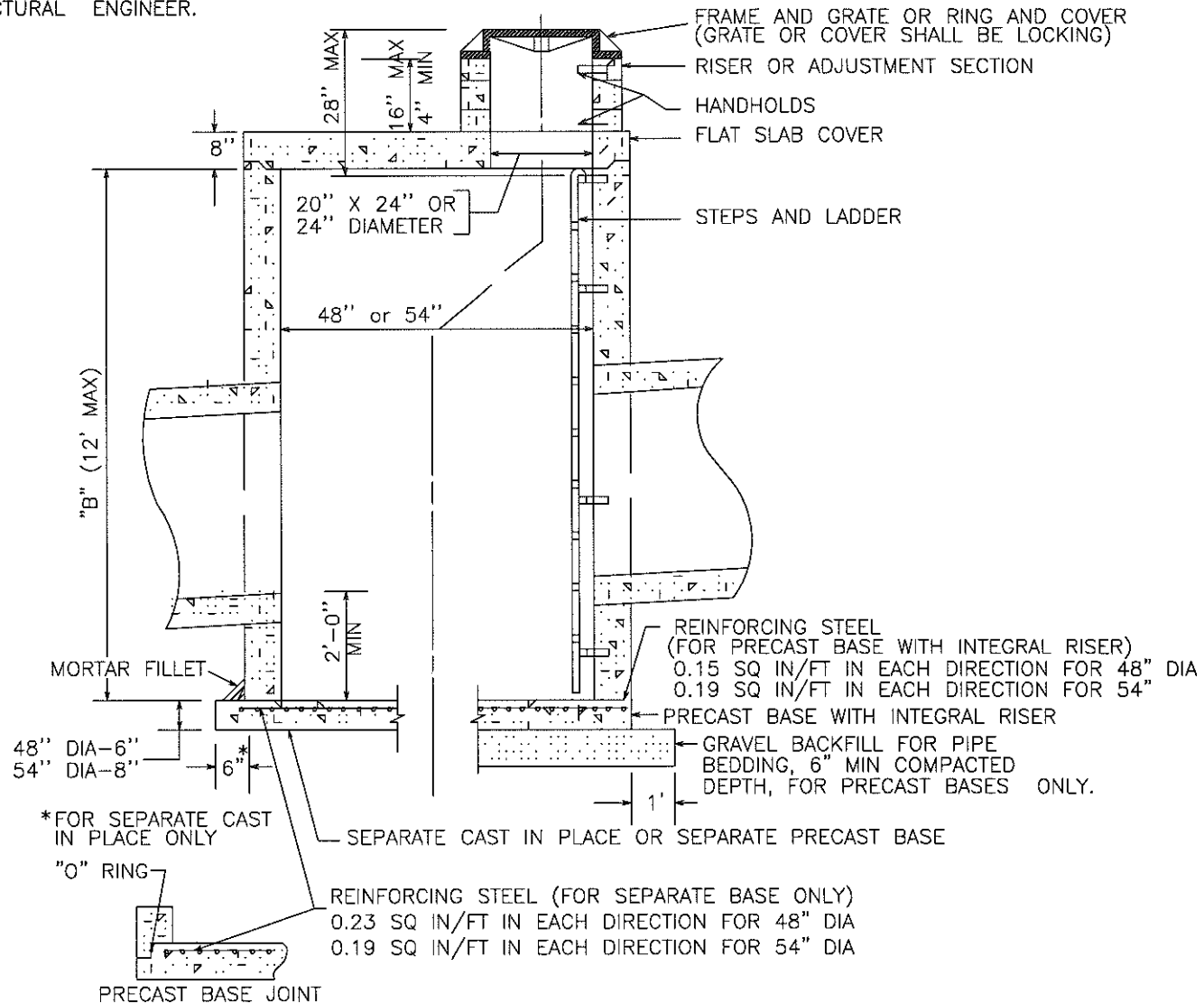
COUNTY ROAD ENGINEER

2-7-03

DATE

DESIGN ASSUMPTIONS

SOIL BEARING VALUE EQUALS 3300 PSF (MIN). WHERE
SOIL BEARING VALUE IS LESS THAN 3300 PSF, THE BASE
SHALL BE DESIGNED BY A STRUCTURAL ENGINEER.



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SNOHOMISH COUNTY PUBLIC WORKS

5-090B

CATCHBASIN TYPE 2 - 48" & 54"

APPROVED BY:

Steven E. Morrison

COUNTY ROAD ENGINEER

2-7-03

DATE

NOTES

1. CATCHBASINS TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C 478 (AASHTO M 199) & ASTM C 890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA SPECIFICATIONS.
2. HANDHOLDS IN RISER OR ADJUSTMENT SECTION SHALL HAVE 3" MINIMUM CLEARANCE. STEPS IN CATCHBASIN SHALL HAVE 6" MINIMUM CLEARANCE. NO STEPS ARE REQUIRED WHEN "B" IS 4' OR LESS.
3. ALL REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. ALL PRECAST CONCRETE SHALL OBTAIN 4000 PSI @ 28 DAYS.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS CATCHBASIN WALL THICKNESS. MAXIMUM HOLE SIZE IS 60" FOR 72" CATCHBASIN, 84" FOR 96" CATCHBASIN. MINIMUM DISTANCE BETWEEN HOLES IS 12".
6. FRAME AND GRATE OR RING AND COVER SHALL BE IN ACCORDANCE WITH WSDOT/APWA SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FITS.
7. ALL BASE REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 60,000 PSI AND BE PLACED IN THE UPPER HALF OF THE BASE WITH 1" MINIMUM CLEARANCE.
8. THE BOTTOM OF THE PRECAST CATCHBASIN MAY BE ROUNDED.
9. FOR DETAILS SHOWING FRAME AND GRATE, RING AND COVER SEE STANDARD DRAWING 5-180, "METAL FRAME AND GRATE (20 X 24)" OR STANDARD DRAWING 5-230, "MANHOLE RING AND COVER".
10. FOR DETAILS SHOWING LADDER, STEPS, HANDRAIL AND TOP SLAB SEE STANDARD DRAWING 5-120, "CATCHBASIN DETAILS".
11. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.

WSDOT/APWA PLAN B-1f

SEE TEXT SECTION 5-07.

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SNOHOMISH COUNTY PUBLIC WORKS

5-100A

CATCHBASIN TYPE 2 - 72" & 96"

APPROVED BY:

Steven L. Horner

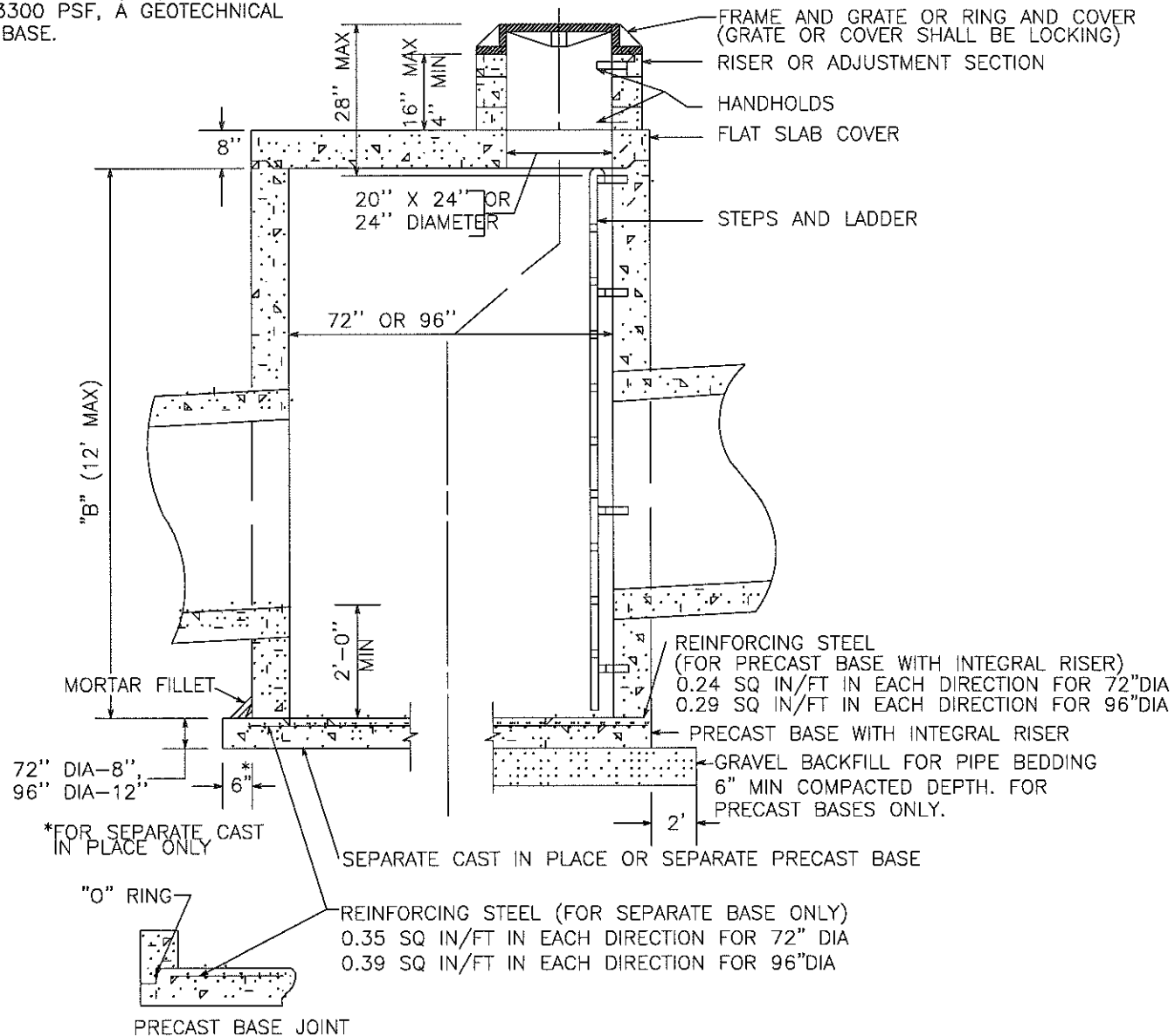
2-7-03

COUNTY ROAD ENGINEER

DATE

DESIGN ASSUMPTIONS

SOIL BEARING VALUE EQUALS 3300 PSF (MIN). WHERE SOIL BEARING IS LESS THAN 3300 PSF, A GEOTECHNICAL ENGINEER SHALL DESIGN THE BASE.



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SNOHOMISH COUNTY PUBLIC WORKS

5-100B

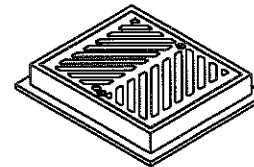
CATCHBASIN TYPE 2 - 72" & 96"

APPROVED BY:

Steven E. Monson 2-7-03

COUNTY ROAD ENGINEER

DATE



LOCKING FRAME AND GRATE
(SEE STD DWG 5-180 FOR
DETAILS)

NOTES:

1. CONCRETE INLET TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C 478 (AASHTO M 199) & ASTM C 890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA SPECIFICATIONS.

2. REINFORCING SHALL BE EQUIVALENT TO WELDED WIRE FABRIC HAVING A MINIMUM AREA OF 0.12 SQUARE INCHES PER FOOT. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A 497 (AASHTO M221). WIRE FABRIC SHALL NOT BE PLACED IN THE KNOCKOUTS.

3. THE BOTTOM OF THE PRECAST BASE SECTION MAY BE ROUNDED.

4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.

5. KNOCKOUTS MAY BE ON ALL 4 SIDES WITH MAXIMUM DIAMETER OF 17". KNOCKOUTS MAY BE EITHER ROUND OR "D" SHAPED. PIPE TO BE INSTALLED IN FACTORY SUPPLIED KNOCKOUTS.

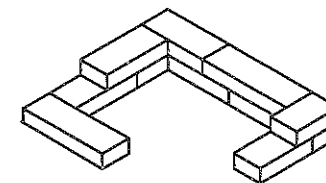
6. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS CONCRETE INLET WALL THICKNESS.

7. THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2" PER FT.

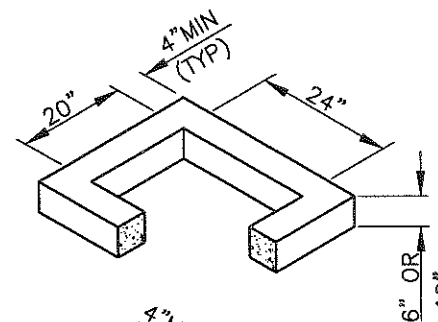
8. CONCRETE INLET FRAME AND GRATE SHALL BE IN ACCORDANCE WITH THE WSDOT/APWA SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT.

9. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.

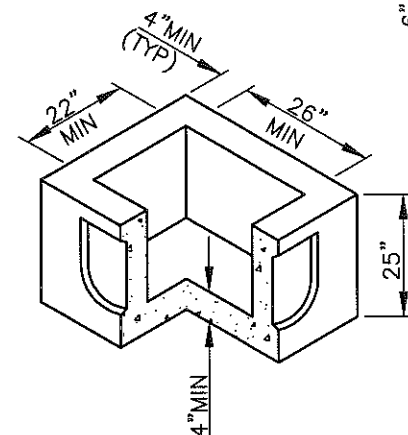
SEE TEXT SECTION 5-06.
WSDOT/APWA PLAN B-26



2"x4"x8" SOLID BRICK
USED FOR FINAL ADJUSTMENT
TO GRADE. 6" HIGH MAX.



6" OR 12" CONCRETE
RISER SECTION
CLASS 4000 CONCRETE



PRECAST BASE SECTION
(MEASUREMENT AT THE TOP
OF THE BASE)

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SNOHOMISH COUNTY PUBLIC WORKS

5-110

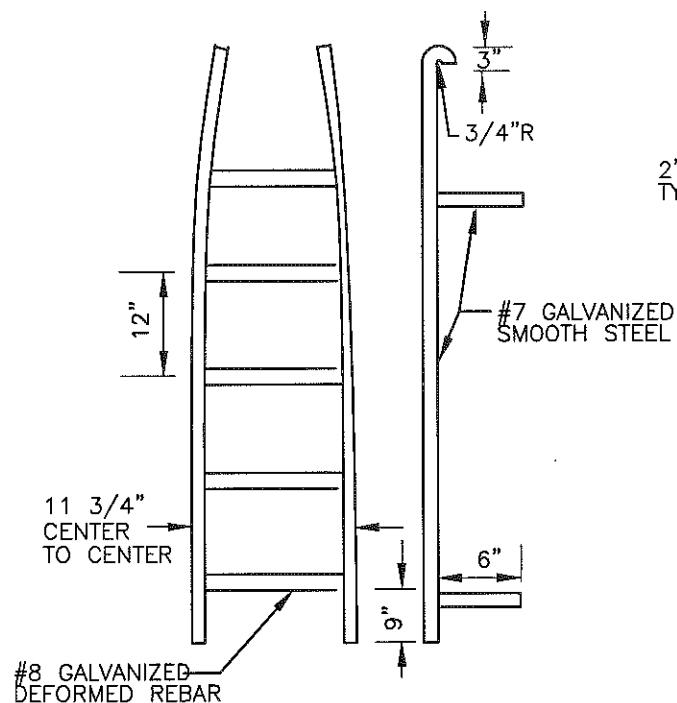
CONCRETE INLET

APPROVED BY:

Steven E. Thompson 2-7-03

COUNTY ROAD ENGINEER

DATE

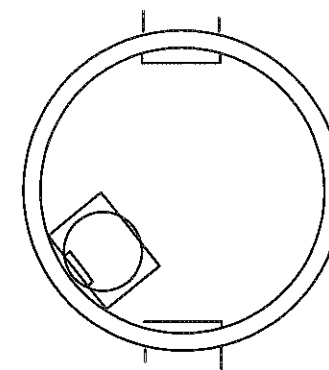
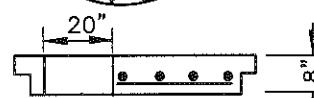
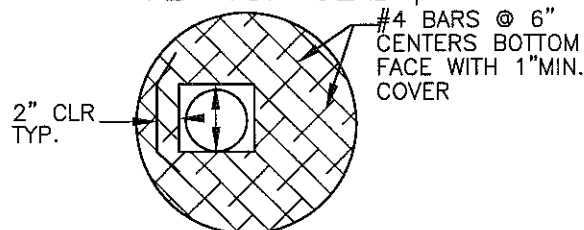
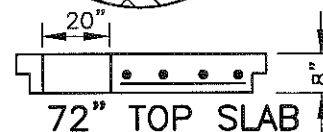
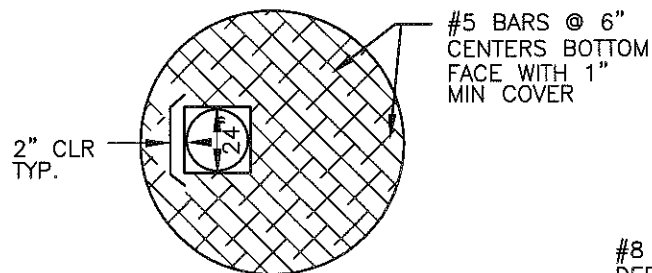
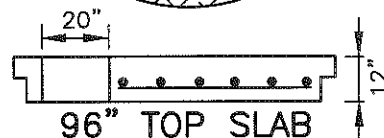
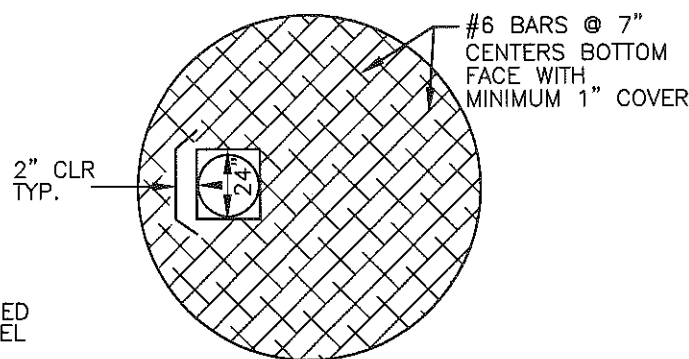


PREFABRICATED LADDER

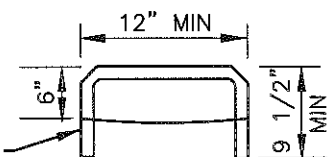
NOTES:

1. PROPRIETARY CATCHBASIN STEPS ARE ACCEPTABLE, PROVIDED THEY CONFORM TO SECTION R, ASTM C 478 (AASHTO M 199) AND MEET ALL WISHA REQUIREMENTS.
2. CATCHBASIN STEP LEGS SHALL BE PARALLEL OR APPROXIMATELY RADIAL AT THE OPTION OF THE MANUFACTURER, EXCEPT THAT ALL STEPS IN ANY CATCH BASIN SHALL BE SIMILAR. PENETRATION OF OUTER WALL BY LEG IS PROHIBITED.
3. SLAB OPENING MAY BE 24" X 20" OR 24" DIAMETER.
4. AS AN ACCEPTABLE ALTERNATIVE TO REBAR, WELDED WIRE FABRIC HAVING A MINIMUM AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A 497 (AASHTO M 221).

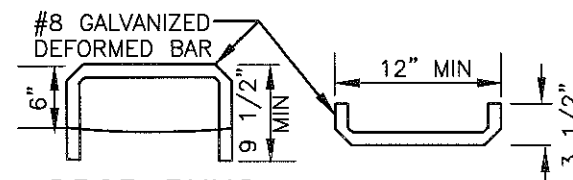
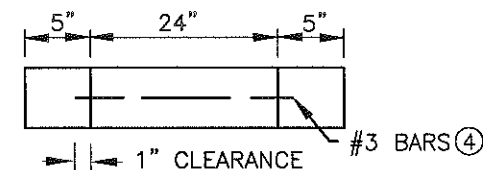
SEE TEXT SECTION 5-06



HANDHOLD



CATCHBASIN STEP



DROP RUNG CATCHBASIN STEP

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SNOHOMISH COUNTY PUBLIC WORKS

5-120

CATCHBASIN DETAILS

APPROVED BY:

Steven E. Hornsaw

COUNTY ROAD ENGINEER

2-7-03

DATE

DESIGN ASSUMPTIONS

HEIGHT 8' TO 12', BEARING VALUE EQUALS 3300 PSF (MIN). OVER 12' TO 25', SOIL BEARING VALUE EQUALS 3800 PSF (MIN). WHERE SOIL BEARING VALUE IS LESS THAN 3300 PSF, THE BASE SHALL BE DESIGNED BY A GEOTECHNICAL ENGINEER.

NOTES:

1. MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 (AASHTO M 199) UNLESS OTHERWISE SHOWN IN PLANS OR NOTED IN THE WSDOT/APWA SPECIFICATIONS.
2. HANDHOLDS IN ADJUSTMENT SECTION SHALL HAVE 3" MINIMUM CLEARANCE. STEPS IN MANHOLE SHALL HAVE 6" MINIMUM CLEARANCE. SEE STANDARD DRAWING 5-170, MANHOLE DETAILS.
3. ALL REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. NON-REINFORCED CONCRETE IN CHANNEL AND SHELF SHALL BE CLASS 3000. ALL PRECAST CONCRETE SHALL BE CLASS 4000.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS MANHOLE WALL THICKNESS. MAXIMUM HOLE SIZE IS 36" FOR 48" MANHOLE, 42" FOR 54" MANHOLE. MINIMUM DISTANCE BETWEEN HOLES IS 8".
6. MANHOLE RINGS AND COVERS SHALL BE IN ACCORDANCE WITH THE WSDOT/APWA SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
7. ALL BASE REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 60,000 PSI AND BE PLACED IN THE UPPER HALF OF THE BASE WITH A 1" MINIMUM CLEARANCE.
8. FOR DETAILS SHOWING GRADE RING, LADDER, STEPS, HANDHOLDS AND TOP SLABS, SEE STANDARD DRAWING 5-170, MANHOLE DETAILS.
9. SEE THE WSDOT/APWA SPECIFICATIONS FOR JOINT REQUIREMENTS.

WSDOT/APWA PLAN B-23a

SEE TEXT SECTION 5-06

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SNOHOMISH COUNTY PUBLIC WORKS

5-130A

MANHOLE TYPE 1 - 48" & 54"

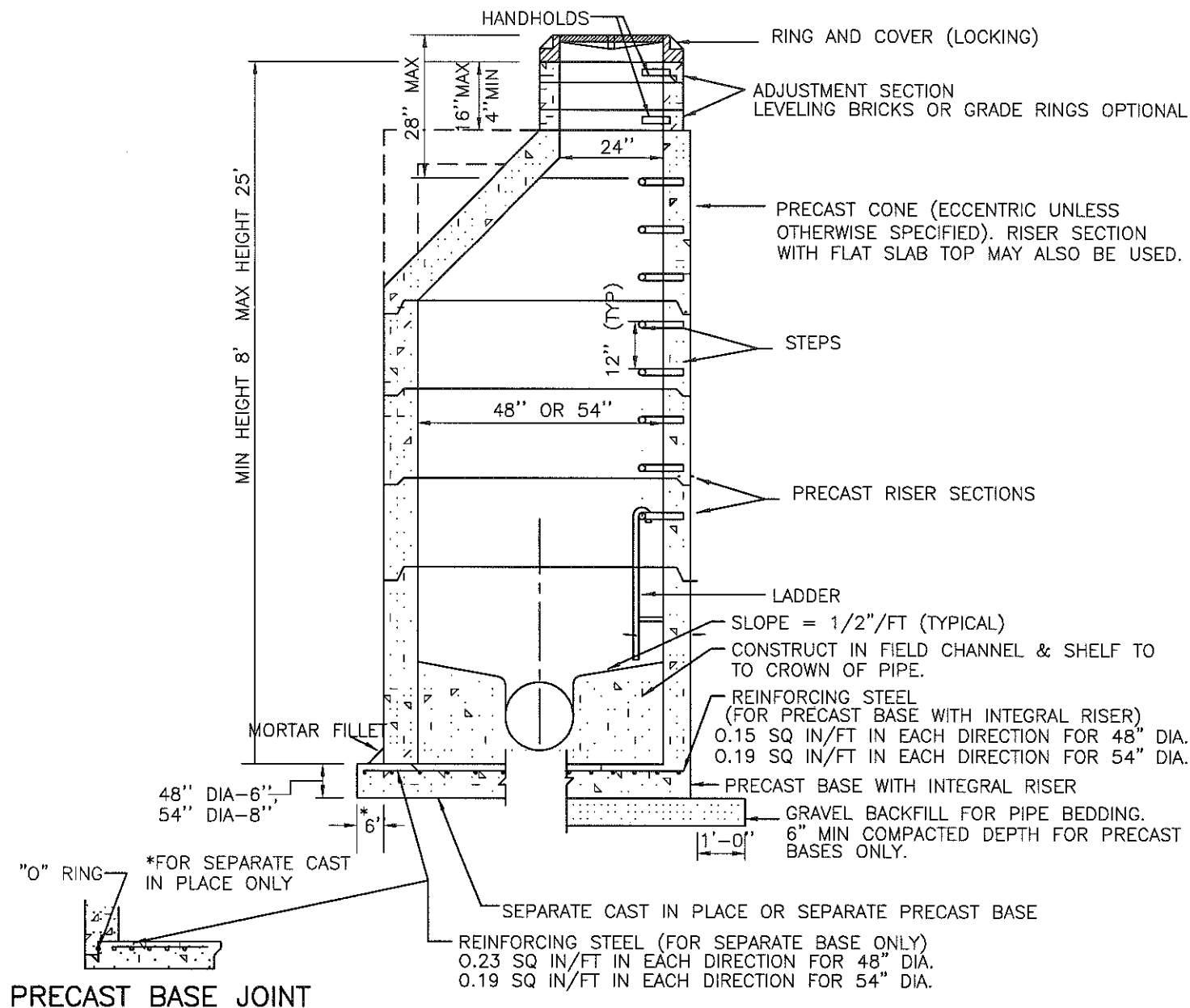
APPROVED BY:

Steve L. Thorman

COUNTY ROAD ENGINEER

2-7-03

DATE



SNOHOMISH COUNTY PUBLIC WORKS

5-130B

MANHOLE TYPE 1 - 48" & 54"

APPROVED BY:

Steven Norman 10-1-04

COUNTY ROAD ENGINEER

DATE

DESIGN ASSUMPTIONS

HEIGHT 8' TO 12', SOIL BEARING VALUE EQUALS 3300 PSF (MIN). OVER 12' TO 25', SOIL BEARING VALUE EQUALS 3800 PSF (MIN). WHERE SOIL BEARING VALUE IS LESS THAN 3300 PSF, THE BASE SHALL BE DESIGNED BY A GEOTECHNICAL ENGINEER.

NOTES:

1. MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C 478 (AASHTO M 199) UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA SPECIFICATIONS.
2. HANDHOLDS IN ADJUSTMENT SECTION SHALL HAVE 3" MINIMUM CLEARANCE. STEPS IN MANHOLE SHALL HAVE 6" MINIMUM CLEARANCE. SEE STANDARD DRAWING 5-170, MANHOLE DETAILS.
3. ALL REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. NON-REINFORCED CONCRETE IN CHANNEL AND SHELF SHALL BE CLASS 3000. ALL PRECAST CONCRETE SHALL BE CLASS 4000.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCK-OUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS MANHOLE WALL THICKNESS. MAXIMUM HOLE SIZE IS 60" FOR 72" MANHOLE, 84" FOR A 96" MANHOLE. MINIMUM DISTANCE BETWEEN HOLES IS 12".
6. MANHOLE RINGS AND COVERS SHALL BE IN ACCORDANCE WITH THE WSDOT/APWA SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
7. ALL BASE REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 60,000 PSI AND BE PLACED IN THE UPPER HALF OF THE BASE WITH A 1" MINIMUM CLEARANCE.
8. FOR DETAILS SHOWING GRADE RING, LADDER, STEPS. HANDHOLDS AND TOP SLABS, SEE STANDARD DRAWING 5-170, MANHOLE DETAILS.
9. SEE THE WSDOT/APWA SPECIFICATIONS FOR JOINT REQUIREMENTS.

WSDOT/APWA PLAN B-23b

SEE TEXT SECTION 5-06

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SNOHOMISH COUNTY PUBLIC WORKS

5-140A

MANHOLE TYPE 2 - 72" & 96"

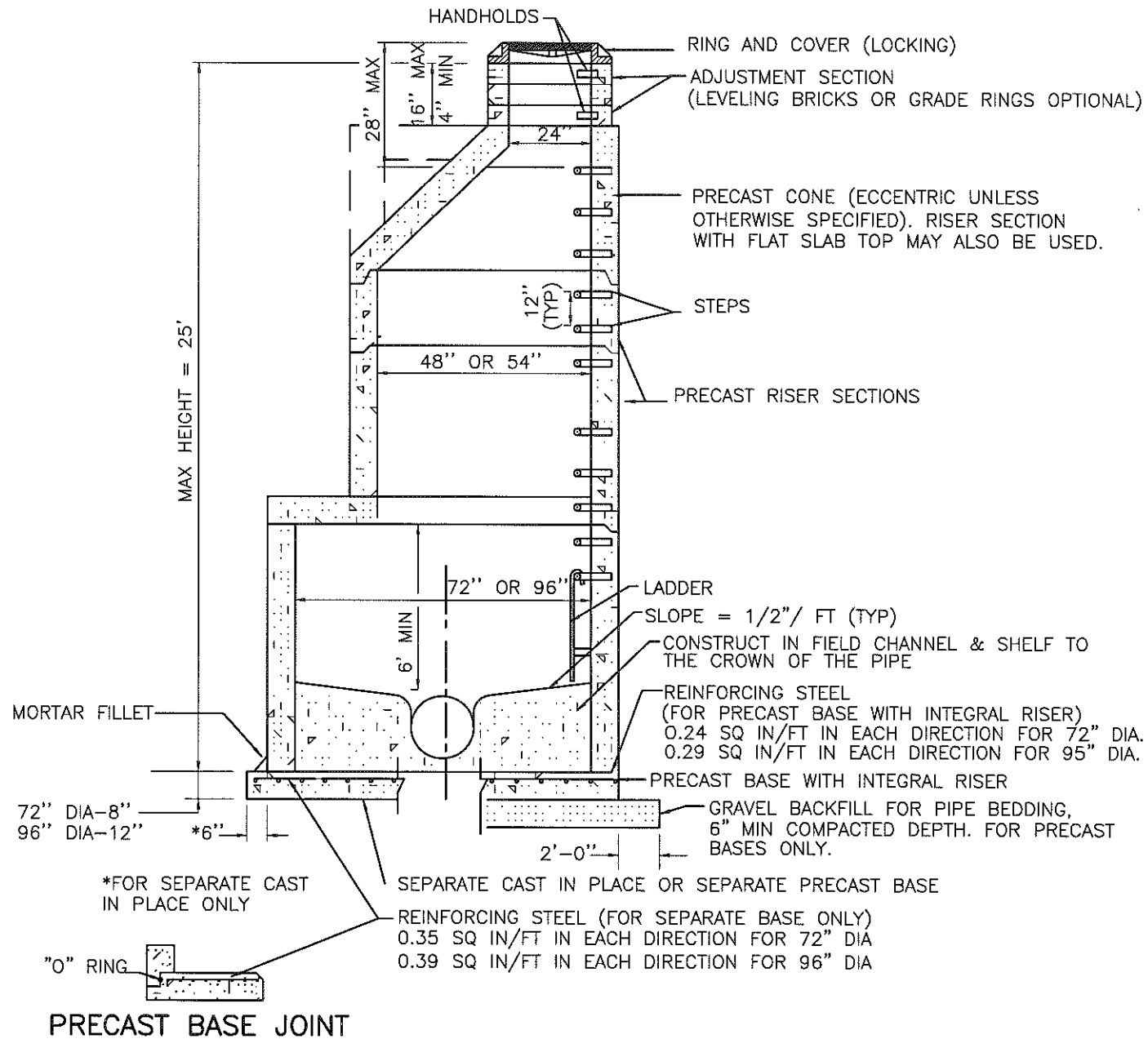
APPROVED BY:

Steven E. Norman

COUNTY ROAD ENGINEER

2-7-03

DATE



SNOHOMISH COUNTY PUBLIC WORKS

5-140B

MANHOLE TYPE 2 - 72" & 96"

APPROVED BY:

Stuart E. Hornum 10-1-04

COUNTY ROAD ENGINEER

DATE

DESIGN ASSUMPTIONS

HEIGHT 8' TO 12', SOIL BEARING VALUE EQUALS 3300 PSF (MIN). OVER 12' TO 25', SOIL BEARING VALUE EQUALS 3800 PSF (MIN). WHERE SOIL BEARING VALUE IS LESS THAN 3300 PSF, A GEOTECHNICAL ENGINEER SHALL DESIGN THE BASE.

NOTES:

1. MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C 478 (AASHTO M 199) UNLESS OTHERWISE SHOWN IN PLANS OR NOTED IN THE WSDOT/APWA SPECIFICATIONS.
2. HANDHOLDS IN ADJUSTMENT SECTION SHALL HAVE 3" MINIMUM CLEARANCE. STEPS IN MANHOLE SHALL HAVE 6" MINIMUM CLEARANCE. SEE STANDARD DRAWING 5-170, MANHOLE DETAILS.
3. ALL REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. NON-REINFORCED CONCRETE IN CHANNEL AND SHELF SHALL BE CLASS 3000. ALL PRECAST CONCRETE SHALL BE CLASS 4000.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCK-OUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MIN.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS MANHOLE WALL THICKNESS. MAXIMUM HOLE SIZE IS 35" FOR 48" MANHOLE, 42" FOR 54" MANHOLE, 60" FOR 72" MANHOLE, 84" FOR 96" MANHOLE. MINIMUM DISTANCE BETWEEN HOLES IS 12".
6. MANHOLE RINGS AND COVERS SHALL BE IN ACCORDANCE WITH THE WSDOT/APWA SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
7. ALL BASE REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 60,000 PSI AND BE PLACED IN THE UPPER HALF OF THE BASE WITH A 1" MINIMUM CLEARANCE.
8. FOR DETAILS SHOWING GRADE RING, LADDER, STEPS, HAND-HOLDS AND TOP SLABS, SEE STANDARD DRAWING 5-170, MANHOLE DETAILS.
9. SEE THE WSDOT/APWA SPECIFICATIONS FOR JOINT REQUIREMENTS.

WSDOT/APWA PLAN B-23c

SEE TEXT SECTION 5-06

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SNOHOMISH COUNTY PUBLIC WORKS

5-150A

MANHOLE TYPE 3 - 48", 54", 72" & 96"

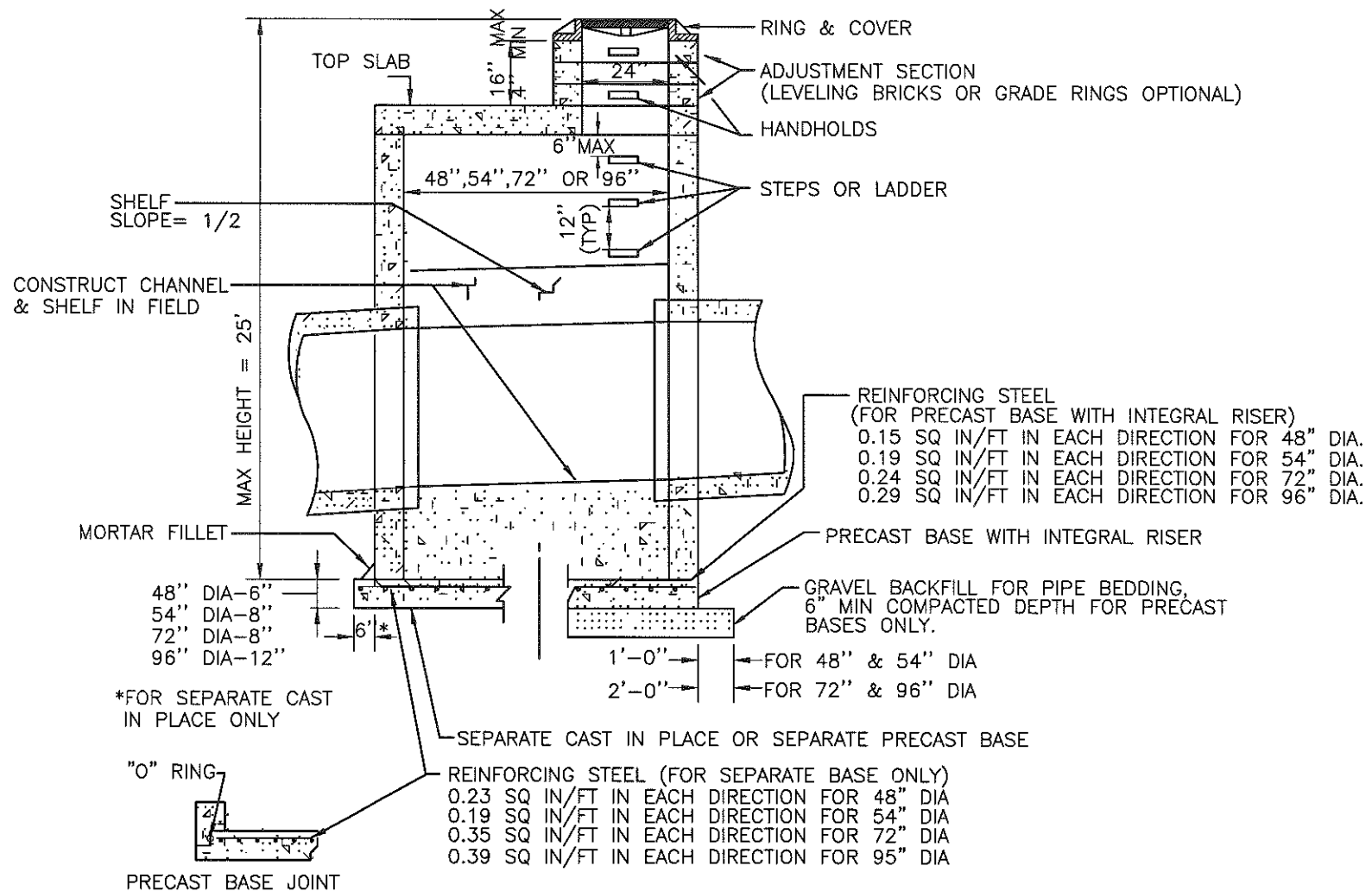
APPROVED BY:

Steven E. Thompson

COUNTY ROAD ENGINEER

2-7-03

DATE



SNOHOMISH COUNTY PUBLIC WORKS

5-150B

MANHOLE TYPE 3 - 48", 54", 72" & 96"

APPROVED BY:

Steve E. Hansen

10-1-04

COUNTY ROAD ENGINEER

DATE

NOTES:

1. MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C 478 (AASHTO M 199) UNLESS OTHERWISE SHOWN IN PLANS OR NOTED IN THE WSDOT/APWA SPECIFICATIONS.

2. HANDHOLDS IN ADJUSTMENT SECTION SHALL HAVE 3" MINIMUM CLEARANCE. STEPS IN MANHOLE SHALL HAVE 6" MINIMUM CLEARANCE. SEE STANDARD DRAWING 5-170, MANHOLE DETAILS.

3. ALL REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. NON-REINFORCED CONCRETE IN CHANNEL AND SHELF SHALL BE CLASS 3000. ALL PRECAST CONCRETE SHALL BE CLASS 4000.

4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.

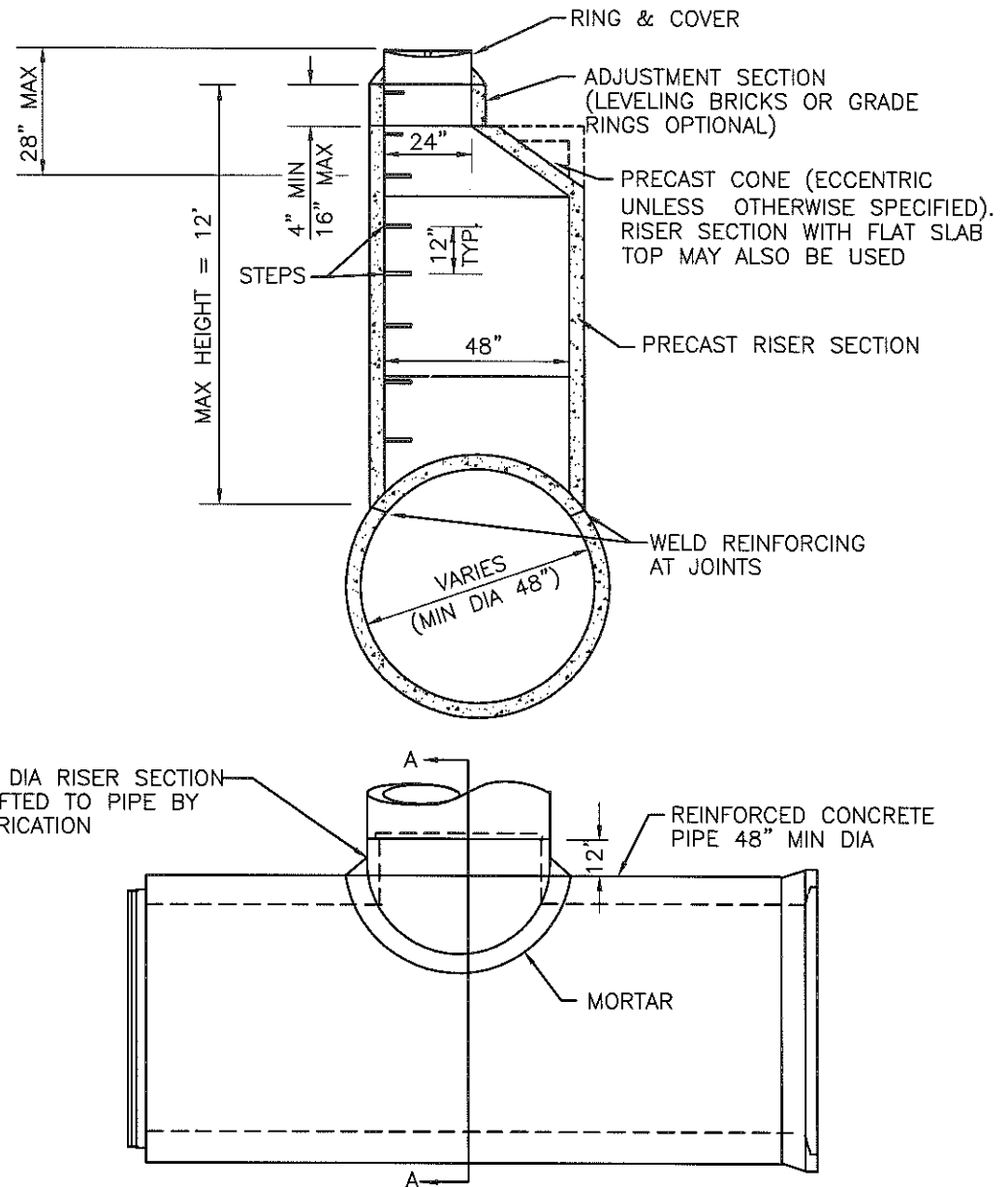
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS MANHOLE WALL THICKNESS. MAXIMUM HOLE SIZE IS 36" FOR 48" MANHOLE, 42" FOR 54" MANHOLE. MINIMUM DISTANCE BETWEEN HOLES IS 8".

6. MANHOLE RINGS AND COVERS SHALL BE IN ACCORDANCE WITH THE WSDOT/APWA SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.

7. ALL BASE REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 60,000 PSI AND BE PLACED IN THE UPPER HALF OF THE BASE WITH A 1" MINIMUM CLEARANCE.

8. FOR DETAILS SHOWING GRADE RING, LADDER, STEPS, HANDHOLDS AND TOP SLABS, SEE STANDARD DRAWING 5-170, MANHOLE DETAILS.

SEE TEXT SECTION 5-06.
WSDOT/APWA PLAN B-23d



SNOHOMISH COUNTY PUBLIC WORKS

5-160

MANHOLE TYPE 4

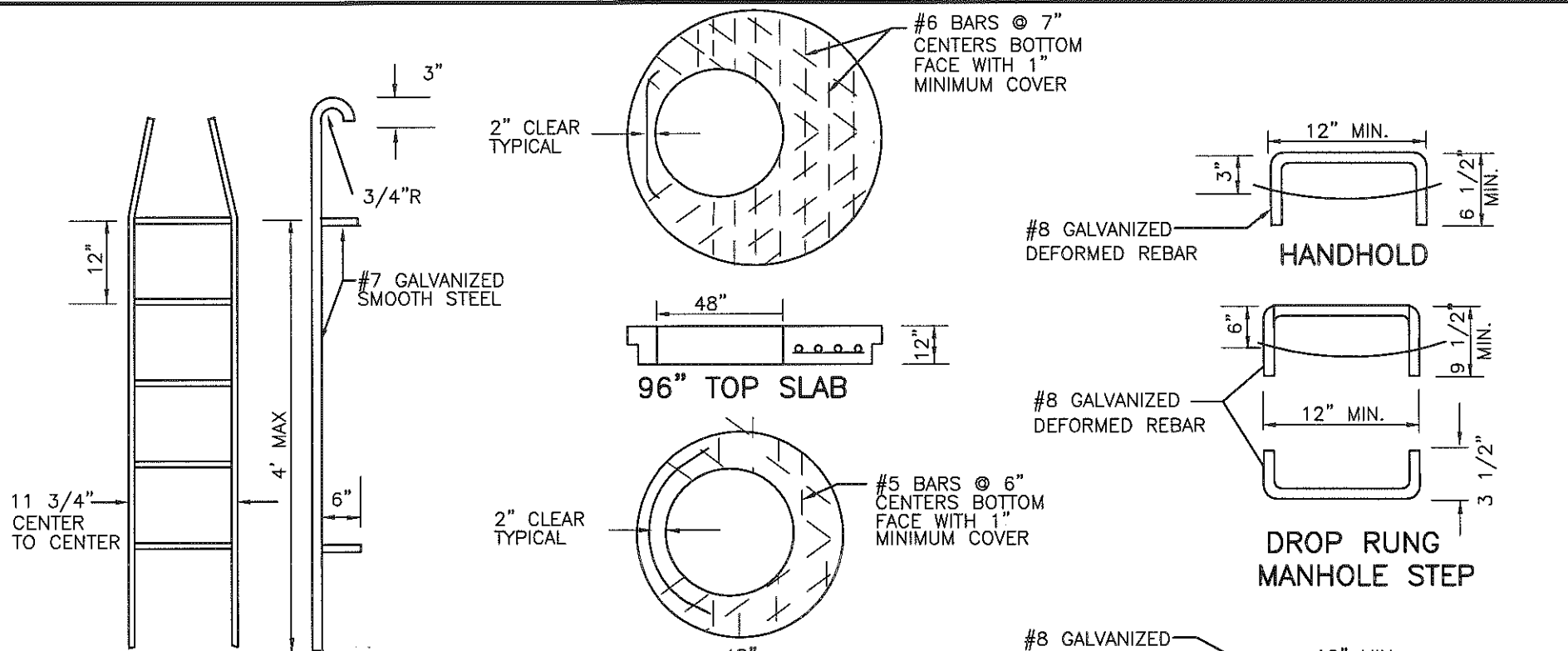
APPROVED BY:

Steve E. Hansen

COUNTY ROAD ENGINEER

10-1-04

DATE



NOTES:

1. PROPRIETARY MANHOLE STEPS ARE ACCEPTABLE PROVIDED THAT THEY CONFORM TO SECTION R, ASTM C 478 (AASHTO M 199) AND MEET ALL WISHA REQUIREMENTS.

2. MANHOLE STEP LEGS SHALL BE PARALLEL OR APPROXIMATELY RADIAL AT THE OPTION OF THE MANUFACTURER, EXCEPT THAT ALL STEPS IN ANY MANHOLE SHALL BE SIMILAR. PENETRATION OF OUTER WALL BY A LEG IS PROHIBITED.

SEE TEXT SECTION 5-06
WSDOT/APWA PLAN B-24

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SNOHOMISH COUNTY PUBLIC WORKS

5-170

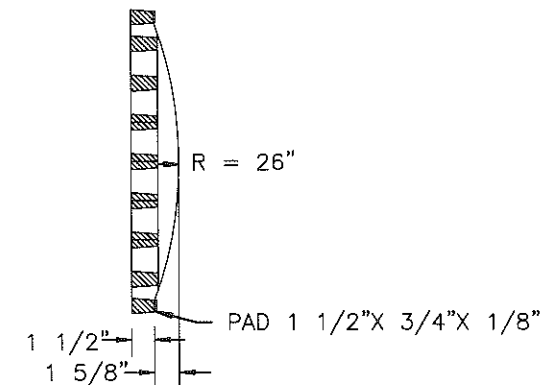
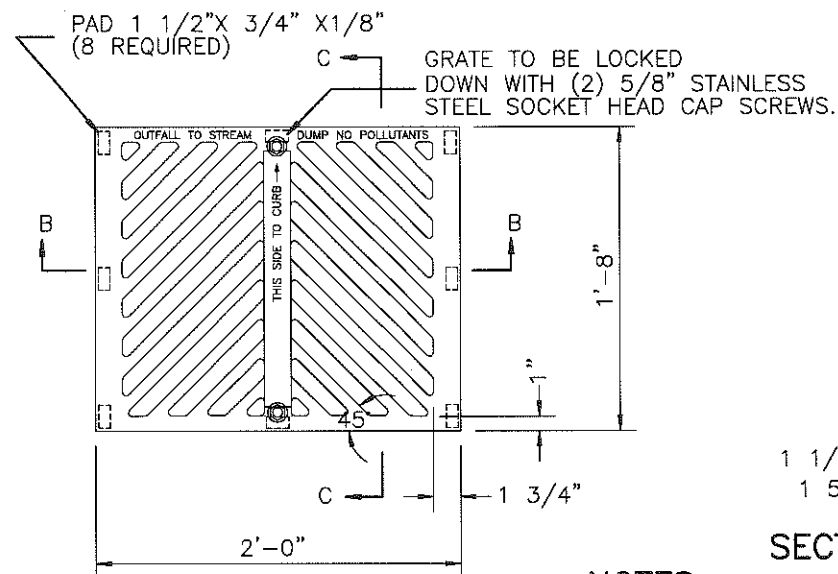
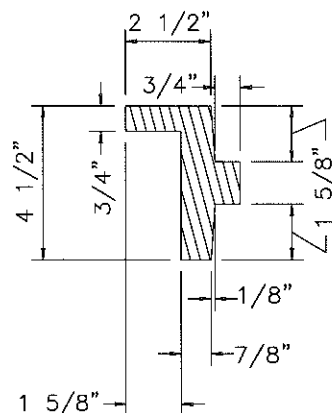
MANHOLE DETAILS

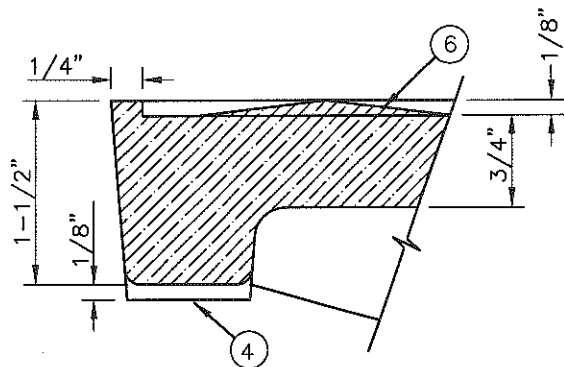
APPROVED BY:

Steven E. Norman 2-7-03

COUNTY ROAD ENGINEER

DATE





SECTION C-C

NOTES:

1. MATERIAL USED SHALL BE DUCTILE IRON PER ASTM-A536, GRADE 80-55-06, WITH BITUMINOUS COATING.

2. WHEN LOCKING GRATE REQUIRED HOLES WILL BE PROVIDED IN CASTING TO ALLOW FOR TWO 5/8" DIA STAINLESS STEEL, SOCKET HEAD CAP SCREWS. NO PART OF SCREW WILL PROTRUDE ABOVE GRATE.

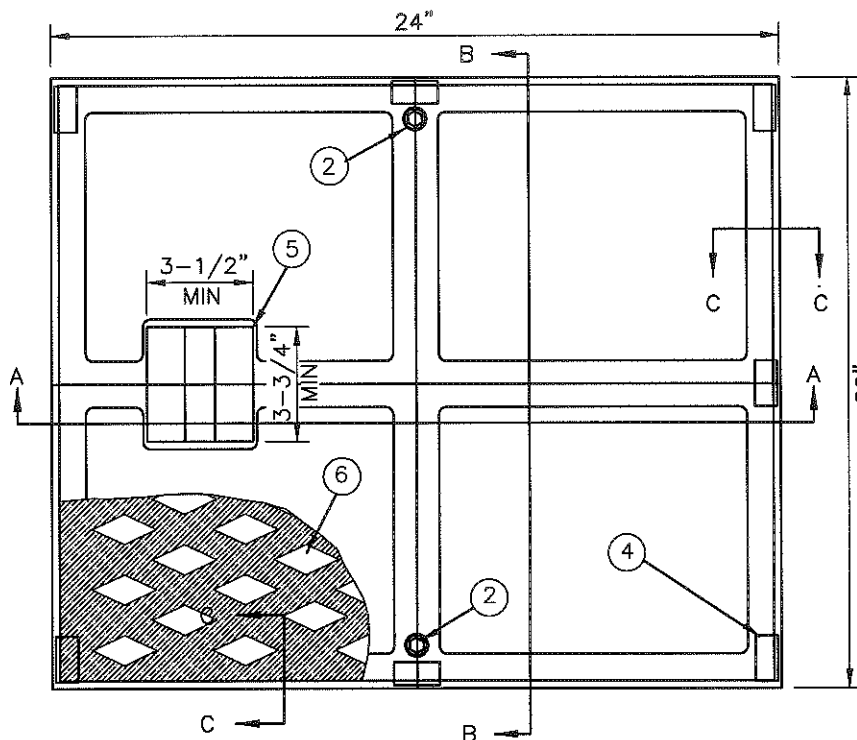
3. GRATE TO BE USED WITH FRAME SHOWN IN STD DWG 5-180.

4. GRATE SEATING: 8 INTEGRALLY CAST PADS.

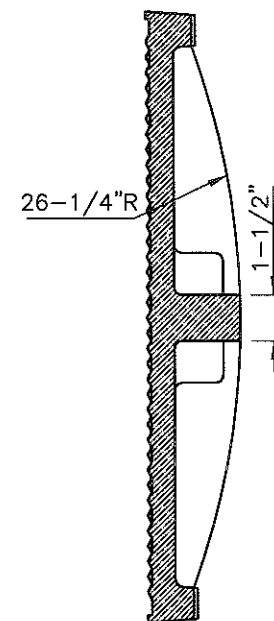
5. CAST POCKET LIFT HANDLE.

6. NON-SKID DIAMOND PATTERN APPROX 2-1/2"x1"x1/8" HIGH

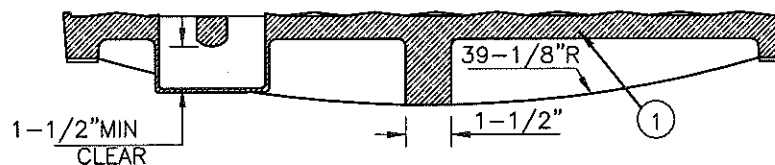
SEE TEXT SECTION 5-07
WSDOT/APWA PLAN B-2



TOP VIEW



SECTION B-B



SECTION A-A



SNOHOMISH COUNTY PUBLIC WORKS

5-190

SOLID METAL COVER FOR CATCHBASIN

APPROVED BY:

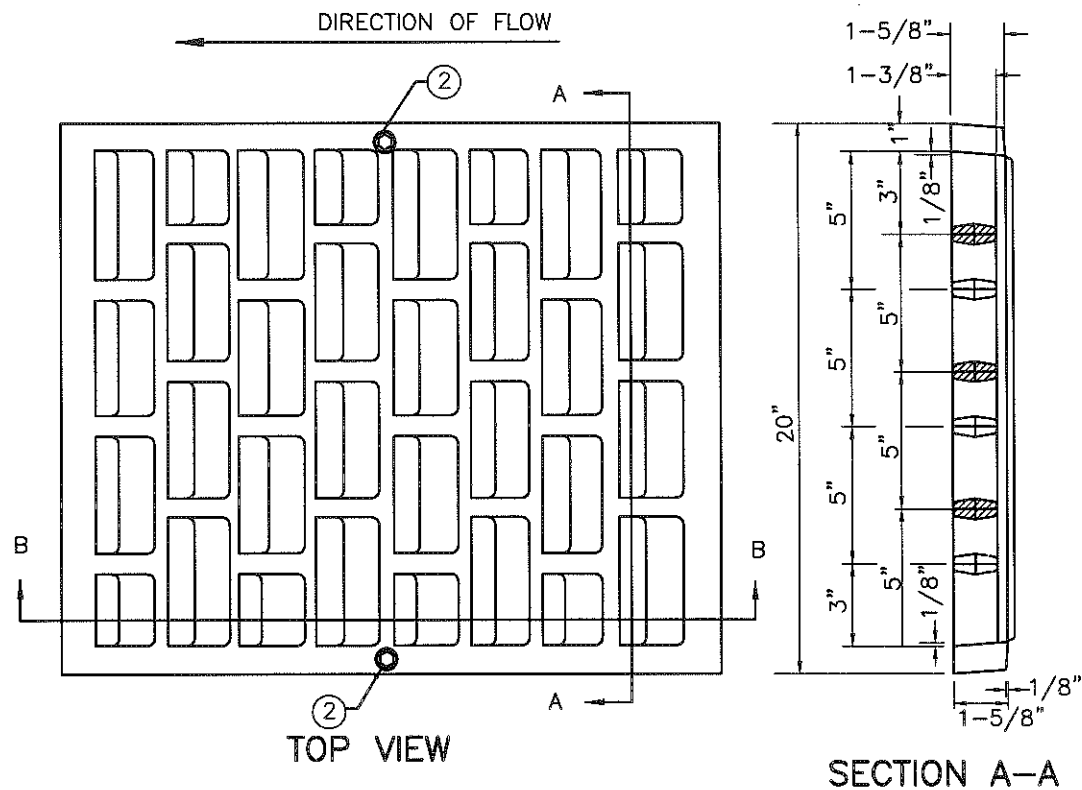
Steven E. Hornsaw

COUNTY ROAD ENGINEER

2-7-03

DATE

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Technical drawing of a 24-inch long threaded rod. The drawing shows a side view of the rod with a threaded section in the middle. The total length is 24 inches. The threaded section is 1-5/8 inches long. The pitch of the thread is 2-1/4 inches. The thread is 2-3/4 inches wide. The end of the rod is 1-1/4 inches wide. The drawing includes a callout ① pointing to the end of the rod.

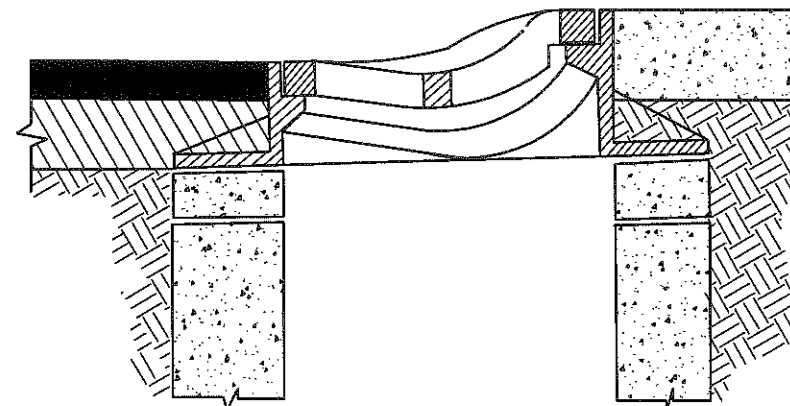
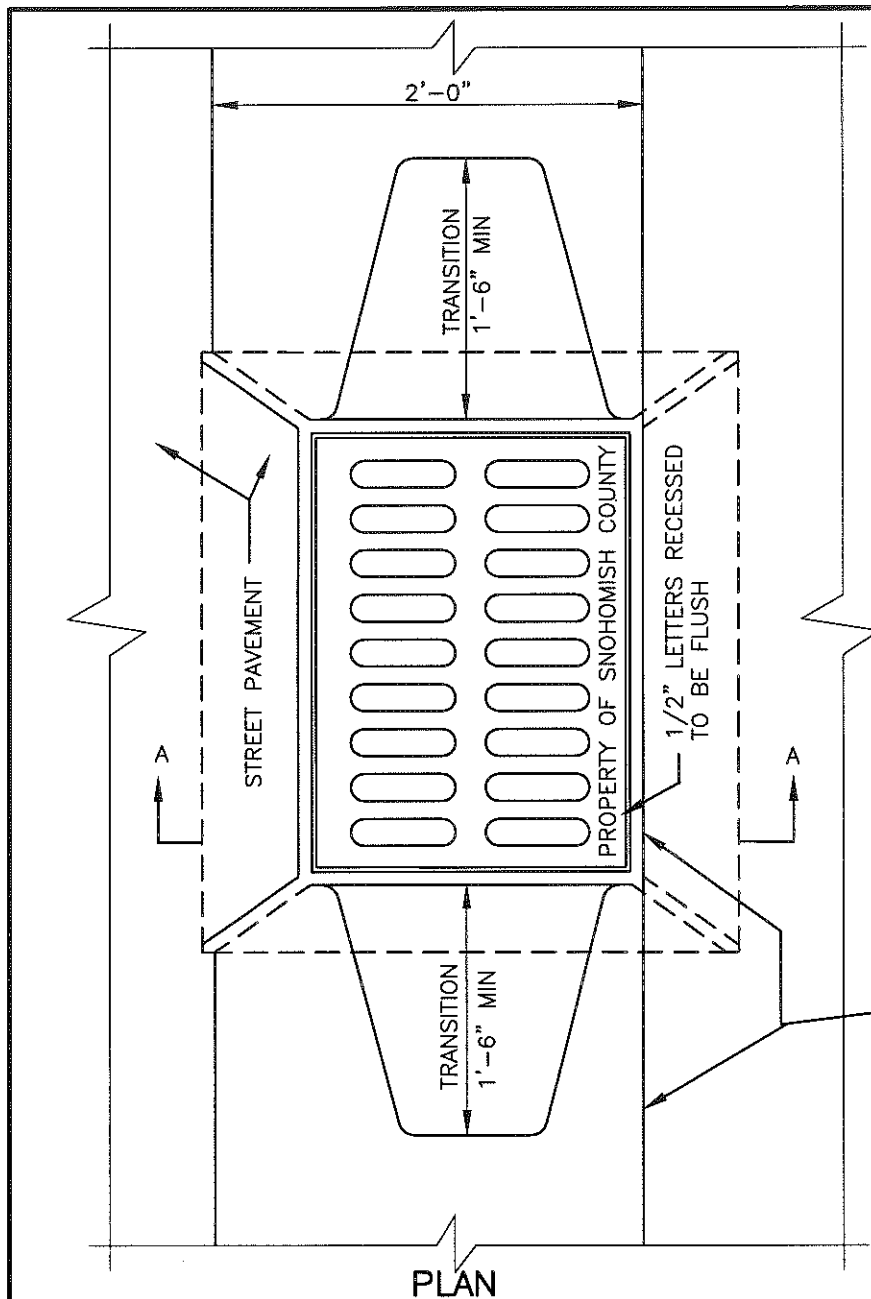


TEXT SECTION 5-07





DATE _____



SECTION A-A

NOTES:

1. SET FRAME TO GRADE AND CONSTRUCT ROAD AND CURB TO BE FLUSH AT FRONT AND BACK OF FRAME.
2. SEE SECTION 5-07.
3. THE WORDS "PROPERTY OF SNOHOMISH COUNTY" SHALL BE OMITTED IF GRATE IS ON PRIVATE SYSTEM.
4. NOT TO BE USED ON THICKENED EDGE ROADWAYS.

BACK EDGE OF FRAME EVEN
WITH BACK FACE OF CURB

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SNOHOMISH COUNTY PUBLIC WORKS

5-220B

ROLLED CURB FRAME & GRATE INSTALLATION

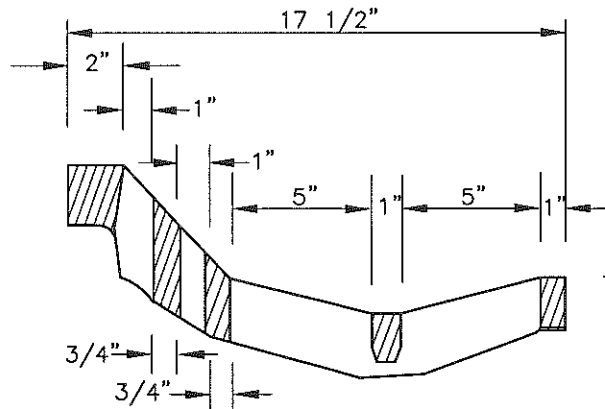
APPROVED BY:

Steven E. Norman

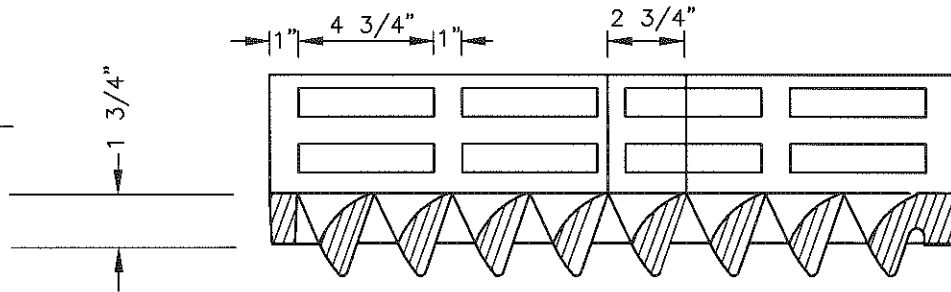
COUNTY ROAD ENGINEER

2-7-03

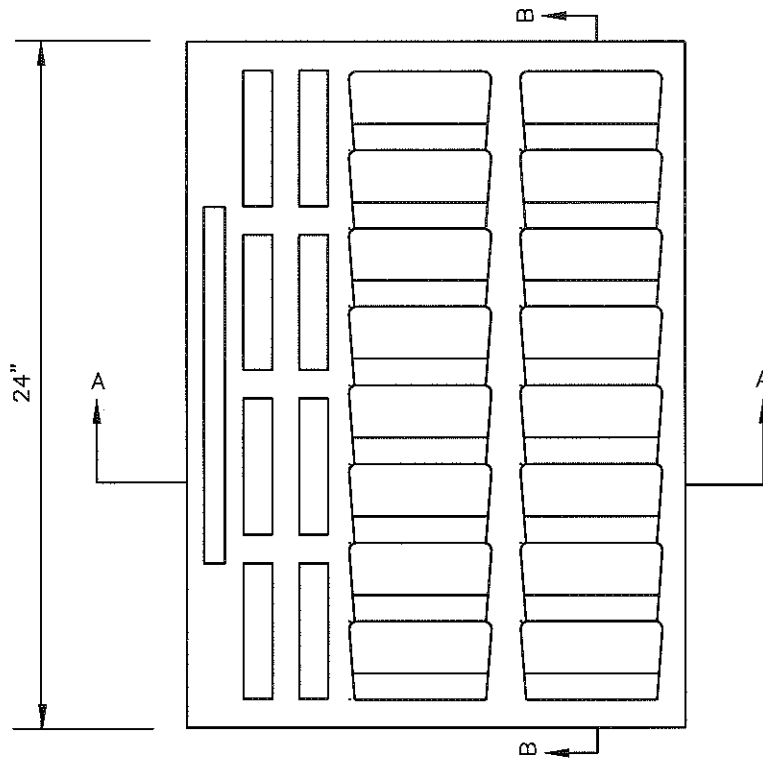
DATE



SECTION A-A



SECTION B-B



NOTES:

1. MATERIAL IS CAST IRON ASTM A4B CLASS 30.
 2. THE WORDS "PROPERTY OF SNOHOMISH COUNTY" SHALL BE OMITTED IF ON A PRIVATE SYSTEM.
- SEE TEXT SECTION 5-07.

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SNOHOMISH COUNTY PUBLIC WORKS

5-225

ROLLED CURB VANED GRATE

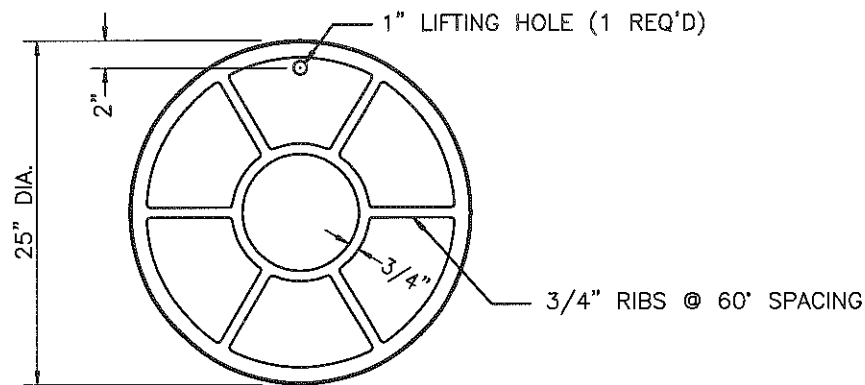
APPROVED BY:

Steven E. Mornan

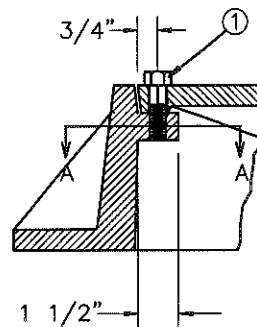
COUNTY ROAD ENGINEER

2-3-07

DATE



BOTTOM OF COVER



BOLT-DOWN DETAIL

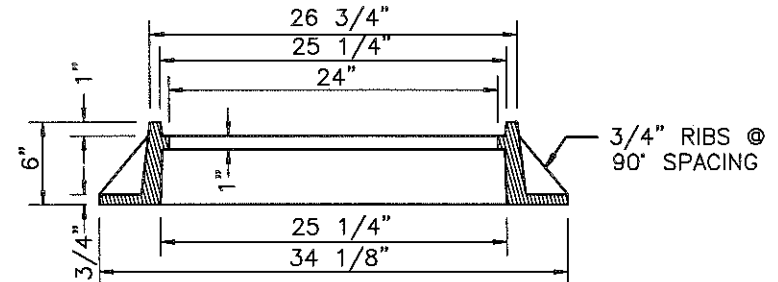
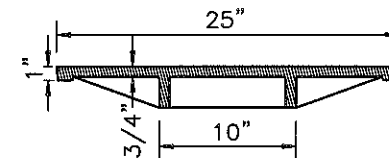
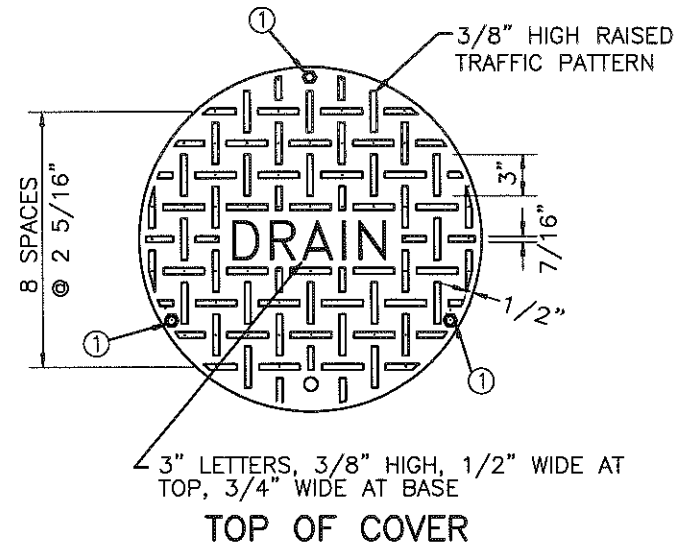
(RAISED TRAFFIC PATTERN NOT SHOWN)

NOTES:

1. COVER SHALL BE LOCKED DOWN WITH (3) 5/8" STAINLESS STEEL SOCKET HEAD CAP SCREWS. DRILL (3) 11/16" HOLES IN COVER SPACED AT 120 DEGREES AND 3/4" IN FROM EDGE OF COVER.

2. MATERIAL IS DUCTILE IRON ASTM A 536 GRADE 80-55-06.

SEE TEXT SECTION 5-07.



FRAME AND COVER ELEVATION

(RAISED TRAFFIC PATTERN NOT SHOWN)

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SNOHOMISH COUNTY PUBLIC WORKS

5-230

MANHOLE RING AND COVER

APPROVED BY:

Stuart E. Wornsen

COUNTY ROAD ENGINEER

2-7-03

DATE

NOTES:

1. EXCEPT AS SHOWN OR NOTED, UNITS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS FOR CATCHBASIN TYPE 2 54" MINIMUM DIAMETER.
2. FOR DETAILS SHOWING GRADE RING, LADDER, STEPS, HANDHOLDS AND TOP SLABS, SEE STD DWG 5-120, CATCHBASIN DETAILS.
3. THE RESTRICTOR/SEPARATOR AND PIPE SUPPORTS SHALL BE OF THE SAME MATERIAL AND SHALL BE FABRICATED FROM 0.060" ALUMINUM OR 0.064" ALUMINIZED STEEL OR 0.064" GALVANIZED STEEL PIPE IN ACCORDANCE WITH AASHTO M 36, M 196, M197 AND M274. GALVANIZED STEEL SHALL HAVE TREATMENT 1.
4. OUTLET SHALL BE CONNECTED TO CULVERT OR SEWER PIPE WITH A STANDARD COUPLING BAND FOR CORRUGATED METAL PIPE OR GROUTED INTO THE BELL OF CONCRETE PIPE.
5. THE VERTICAL RISER STEM OF THE RESTRICTOR/SEPARATOR SHALL BE THE SAME DIAMETER AS THE HORIZONTAL OUTLET PIPE WITH A 8" MINIMUM SIZE.
6. FRAME AND LADDER OR STEPS TO BE OFFSET SO THAT (1) CLEANOUT GATE IS VISIBLE FROM TOP. (2) CLIMB-DOWN SPACE IS CLEAR OF RISER AND CLEANOUT GATE. (3) FRAME IS CLEAR OF CURB (IF ANY EXIST).
7. MULTI-ORIFICE ELBOWS MAY BE LOCATED AS SHOWN ON ONE SIDE OF RISER TO ASSURE LADDER CLEARANCE. SIZE OF ELBOWS TO BE DETERMINED BY THE ENGINEER.
8. RESTRICTOR PLATE WITH ORIFICE AS SPECIFIED IN THE PLANS. OMIT PLATE IF ONLY FOR POLLUTION CONTROL. SPECIFIED OPENING TO BE CUT ROUND AND SMOOTH.
9. CLEANOUT GATE/SHEAR GATE :
ALUMINUM ALLOY PER ASTM B26-ZG32A OR CAST IRON ASTM A48 CLASS 30B AS REQUIRED.
LIFT HANDLE EITHER SOLID OR TUBING WITH ADJUSTABLE HOOK AS REQUIRED.
NEOPRENE RUBBER GASKETS REQUIRED BETWEEN FLANGES.
10. ALTERNATE CLEANOUT GATES/SHEAR GATES TO THE DESIGN SHOWN ON STD DWG 5-250 ARE ACCEPTABLE PROVIDED THEY MEET THE MATERIAL SPECIFICATIONS ABOVE AND HAVE A SIX BOLT, 10 3/8" BOLT CIRCLE FOR BOLTING TO THE FLANGE CONNECTION. 5/8" DIAMETER STAINLESS STEEL EXPANSION BOLTS SHALL BE USED.
11. RESTRICTOR TEES MAY BE FABRICATED (EXTRUSION WELDED) FROM DOUBLE WALLED (SMOOTH INTERIOR) CORRUGATED POLYETHYLENE PIPE MEETING THE REQUIREMENTS OF SECTION 5-04.H OF THESE STANDARDS. PIPE SUPPORTS FOR RESTRICTOR SHALL BE FABRICATED FROM THOSE MATERIALS LISTED IN NOTE 3 ABOVE. THE OUTLET SHALL BE CONNECTED TO CULVERT OR SEWER PIPE WITH A PREMIUM COUPLING, BY USING A HEAT SHRINK ADAPTER TO OTHER TYPES OF PIPE, OR BY FABRICATING A SMOOTH OR TAPERED OUTLET TO SLIP INSIDE OF THE CULVERT OR SEWER PIPE.

WSDOT/APWA PLAN B-3

SEE TEXT SECTION 5-09

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SNOHOMISH COUNTY PUBLIC WORKS

5-240A

FLOW RESTRICTOR/ OIL POLLUTION CONTROL
-T RESTRICTOR

APPROVED BY:

Steven E. Morrison

COUNTY ROAD ENGINEER

2-7-03

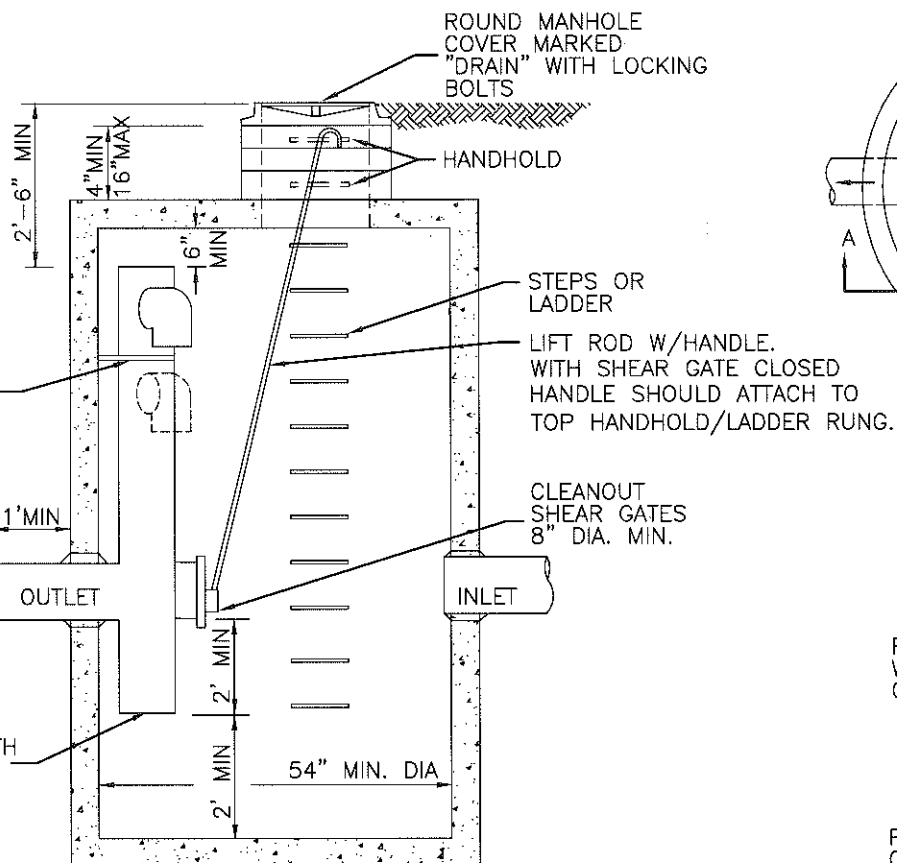
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OVERFLOW ELEVATION
TO PROVIDED DETENTION
AND OIL SEPARATION
PER PLANS

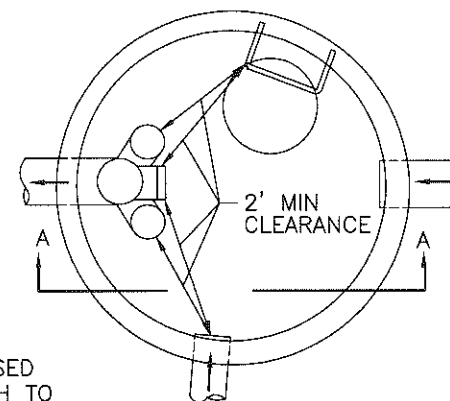
SEE NOTE 3: PIPE
SUPPORTS 3" X .075"
STEEL

METAL PIPE
(SEE NOTE 4)

RESTRICTOR PLATE WITH
ORIFICE (SEE NOTE 8)



SECTION A-A



PLAN VIEW

REMOVABLE
WATERTIGHT
COUPLING

PLATE WITH
ORIFICE AS
SPECIFIED

ELBOW DETAIL

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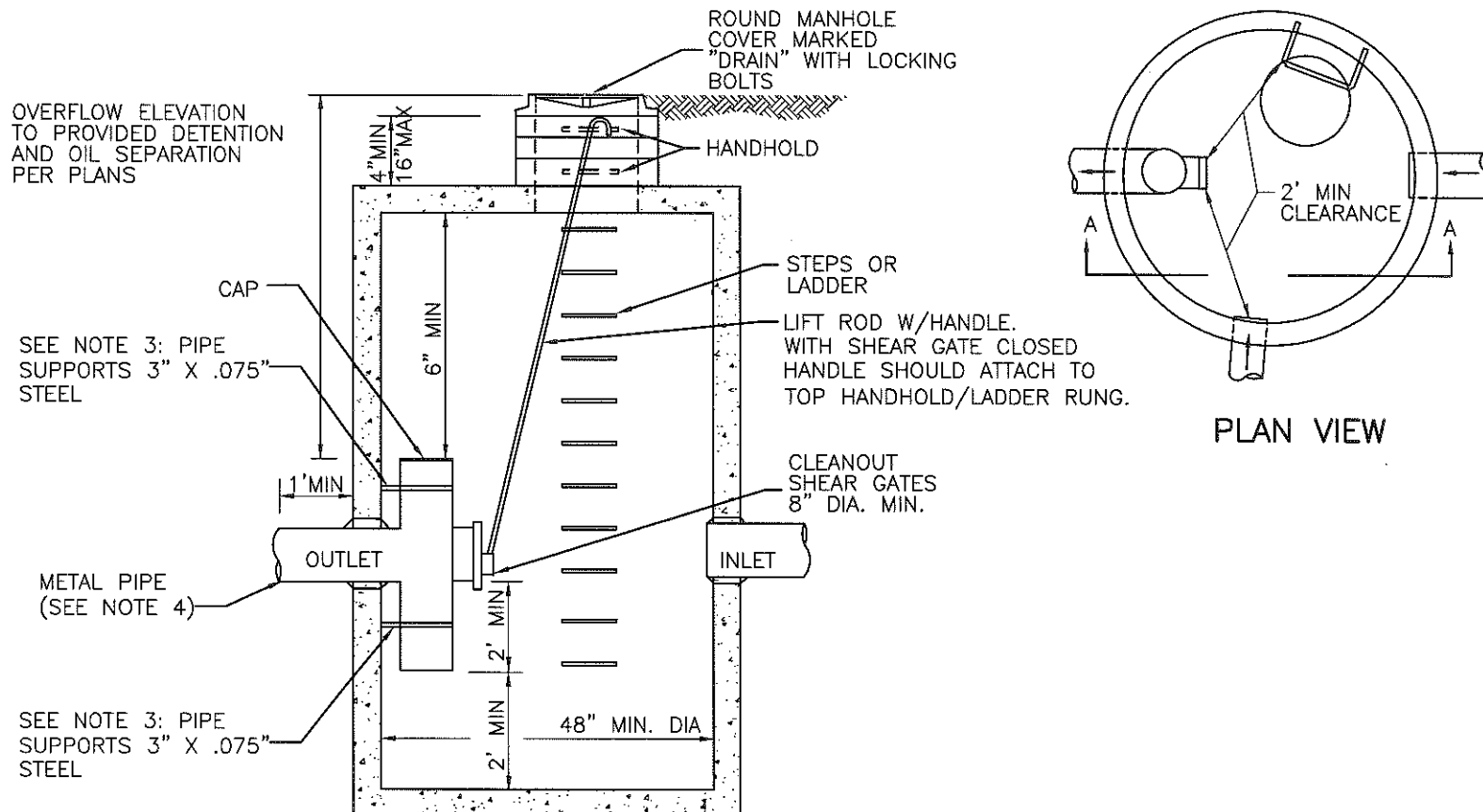
SNOHOMISH COUNTY PUBLIC WORKS

5-240B

FLOW RESTRICTOR/ OIL POLLUTION CONTROL
-T RESTRICTOR

APPROVED BY:

Steve E. Harwood 10-1-04
COUNTY ROAD ENGINEER DATE



TYPE 2 CATCHBASIN
SECTION A-A

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SNOHOMISH COUNTY PUBLIC WORKS

5-240C

OIL POLLUTION CONTROL CATCHBASIN

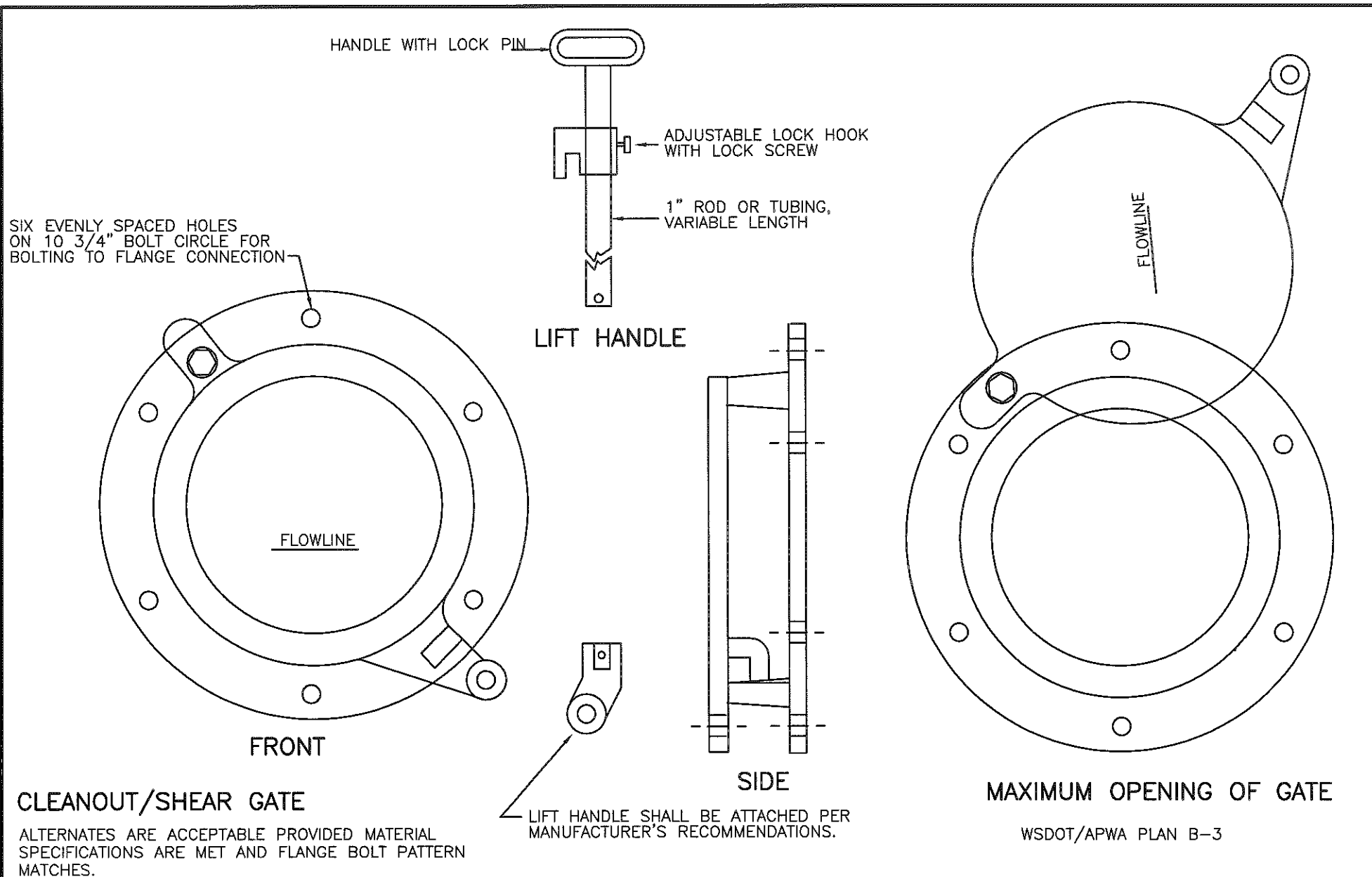
APPROVED BY:

Steven E. Thompson

COUNTY ROAD ENGINEER

10-1-04

DATE



SEE TEXT SECTION 5-09.

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SNOHOMISH COUNTY PUBLIC WORKS

5-250

**FLOW RESTRICTOR/ OIL POLLUTION CONTROL
- T SHEAR GATE DETAIL**

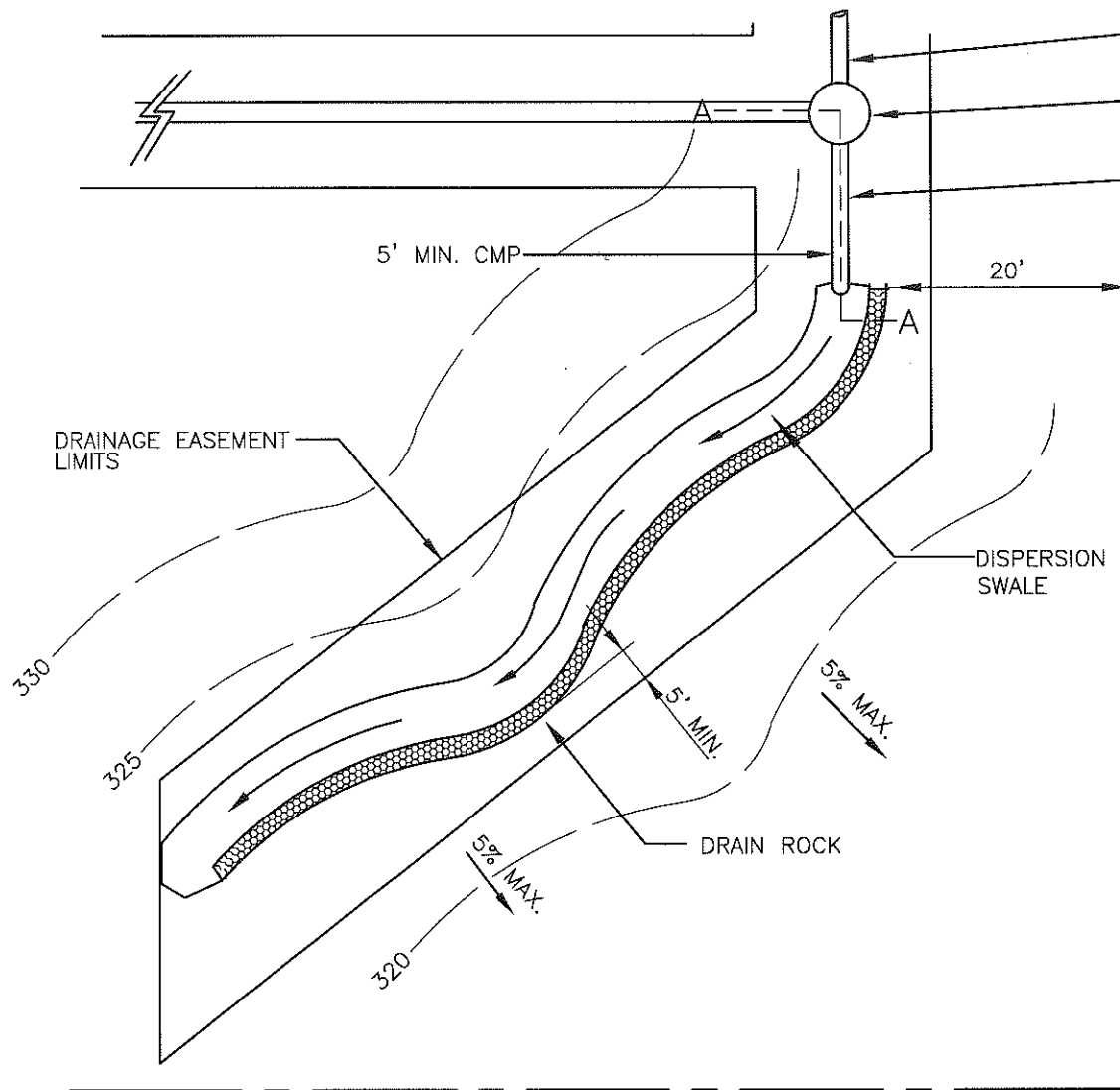
APPROVED BY:

Stuart E. Thompson

COUNTY ROAD ENGINEER

2-7-03

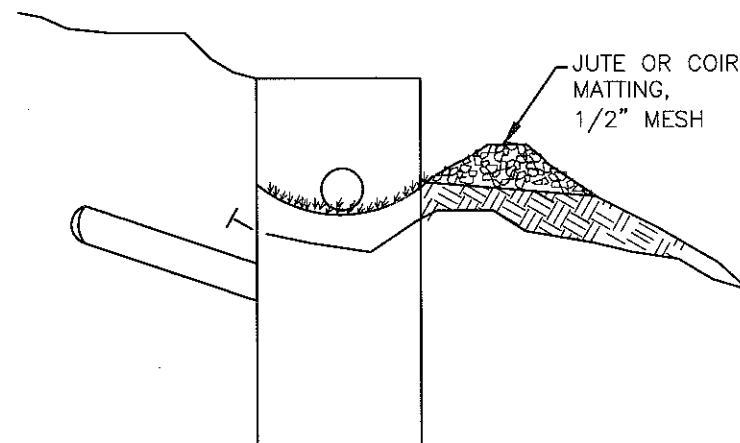
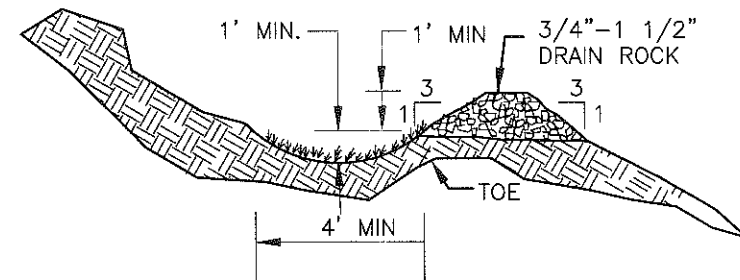
DATE



2ND TRENCH SPREADER AS REQUIRED.

ENERGY DISSIPATION CB IF REQUIRED

SLOPE $\leq 1.0\%$



SECTION A-A

NOTES:

SEE TEXT SECTION 5-12.

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SNOHOMISH COUNTY PUBLIC WORKS

5-260

LEVEL SPREADER TRENCH

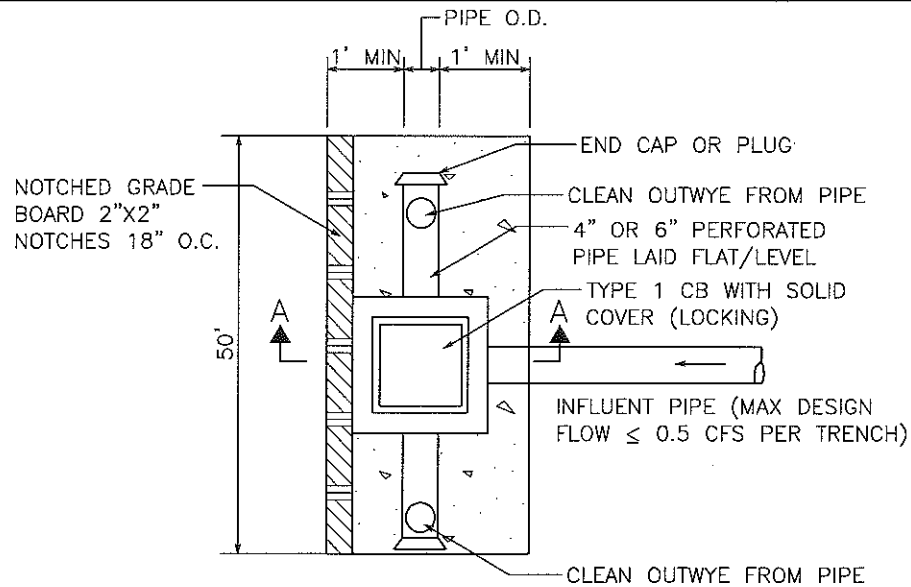
APPROVED BY:

Steve Morris

COUNTY ROAD ENGINEER

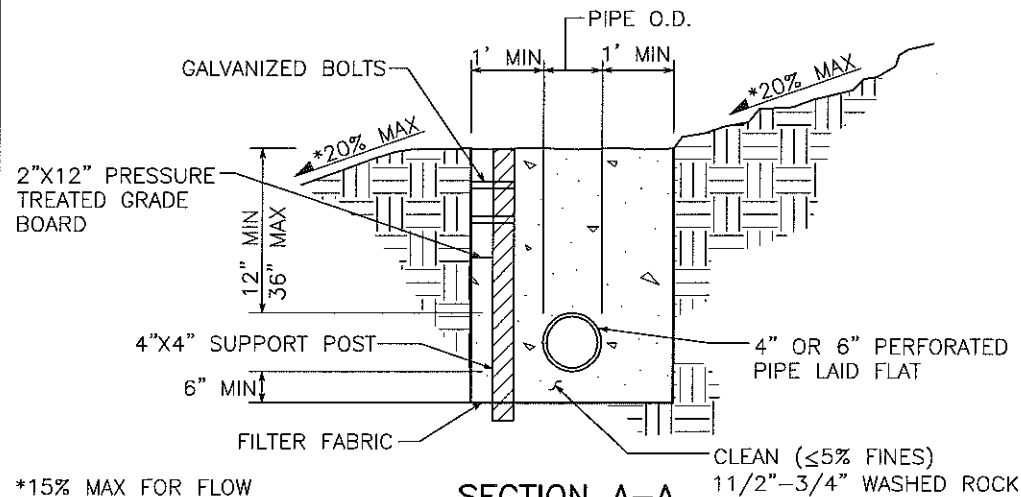
3-3-03

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PLAN

NTS

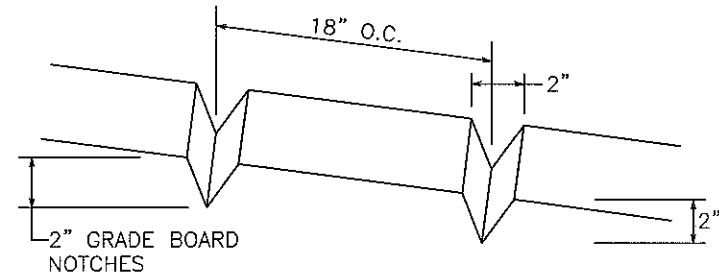
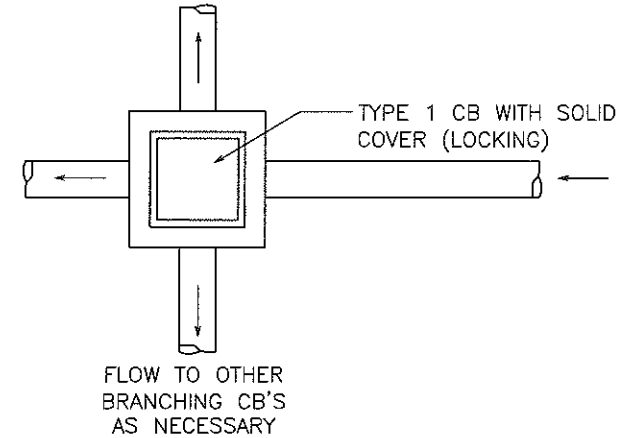


SECTION A-A

NTS

*15% MAX FOR FLOW
CONTROL/WATER QUALITY
TREATMENT IN RURAL AREAS.

FLOW TO SECOND DISPERSAL
TRENCH IF NECESSARY



NOTES:

1. THIS TRENCH SHALL BE CONSTRUCTED SO AS TO PREVENT POINT DISCHARGE AND/OR EROSION.
2. TRENCHES MAY BE PLACED NO CLOSER THAN 50 FEET TO ONE ANOTHER. (100 FEET ALONG FLOWLINE)
3. TRENCH AND GRADE BOARD MUST BE LEVEL. ALIGN TO FOLLOW CONTOURS OF SITE.
4. SUPPORT POST SPACING AS REQUIRED BY SOIL CONDITIONS TO ENSURE GRADE BOARD REMAINS LEVEL.



SNOHOMISH COUNTY PUBLIC WORKS

5-270

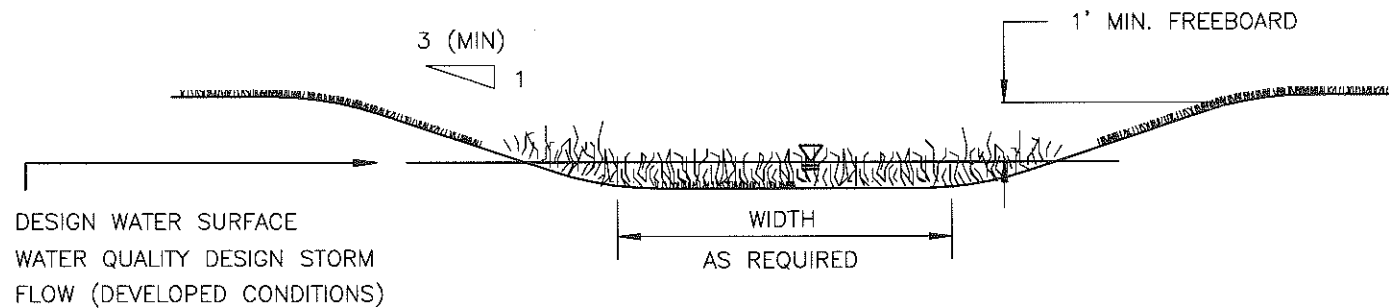
BUBBLE-UP SPREADER

APPROVED BY:

Steve E. [Signature]

COUNTY ROAD ENGINEER

10-1-04
DATE



BIOFILTRATION SWALE

1. BIOFILTRATION SWALES THAT PROVIDE STORMWATER TREATMENT FOR PRIVATE DEVELOPMENT ARE REQUIRED BY CHAPTER 30.63A SCC TO BE PLACED IN SEPARATE TRACTS AND SHALL NOT BE LOCATED IN PUBLIC RIGHT-OF-WAY.
2. LOCATE BIOFILTRATION SWALES WITHIN SEPARATE TRACTS OF LAND "OFF-LINE" FROM THE MAIN ROADWAY STORMWATER CONVEYANCE CHANNEL.
3. GRASS HEIGHT OF 6 INCHES OR LESS. VARIATION OF VEGETATIVE PLANTING MUST BE APPROVED BY THE ENGINEER.
4. FLOW DEPTH SHALL BE 0.25 FEET MAXIMUM.
5. CHANNEL SLOPE SHALL BE 0.005 TO 0.040.
6. SLOPES LESS THAN 2 PERCENT ALLOWED IF UNDERDRAINS ARE PLACED BENEATH THE CHANNEL TO PREVENT PONDING.
7. SLOPES GREATER THAN 4 PERCENT ALLOWED IF CHECK DAMS ARE PLACED IN THE CHANNEL TO SLOW FLOWS.
8. FOR FURTHER INFORMATION REFER TO CHAPTER III-6 OF THE STORMWATER MANAGEMENT MANUAL FOR THE PUGET SOUND BASIN PUBLISHED BY THE WASHINGTON STATE DEPARTMENT OF ECOLOGY.

SEE TEXT SECTION 5-13.

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SNOHOMISH COUNTY PUBLIC WORKS

5-280 BIOFILTRATION SWALE

APPROVED BY:

Stewart E. Hermine

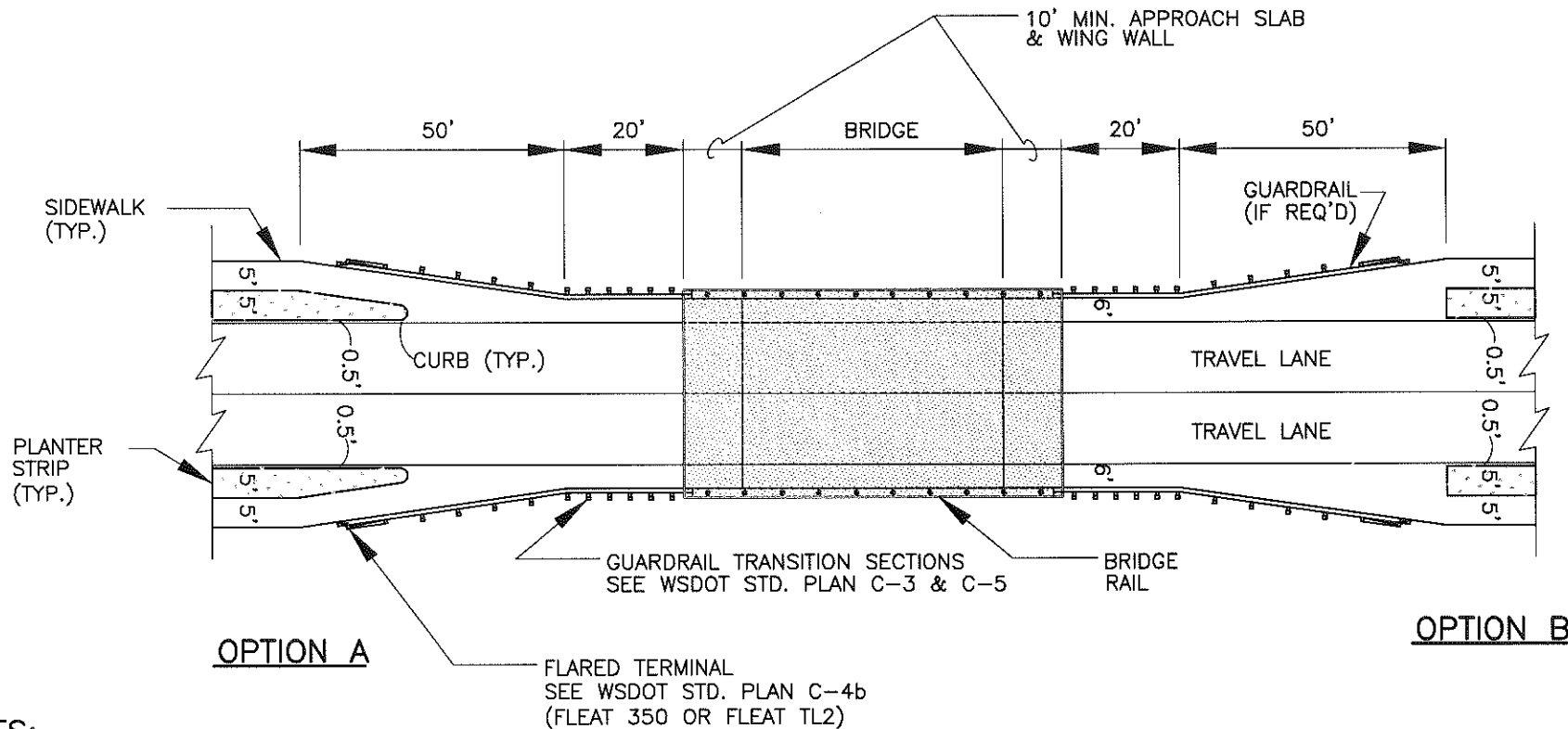
COUNTY ROAD ENGINEER

5-29-03

DATE

CHAPTER 6 DRAWING INDEX

- 6-010 Urban Standard - Transition at Bridge
- 6-020 Rural Standard - Transition at Bridge
- 6-030A Typical Bridge Approach Slab
- 6-030B Typical Bridge Approach Slab
- 6-040 Standard Bridge Rail



TYPICAL PLAN VIEW

N.T.S.

NOTES:

1. GUARDRAIL TAPERS 9:1 MIN.
2. GUARDRAIL NOT REQUIRED WHEN POSTED SPEED IS LESS THAN 35 M.P.H.
3. OPTIONS A AND B ILLUSTRATE PLANTER STRIP END TREATMENT.
4. REFER TO WSDOT STANDARD PLANS AND SPECIFICATIONS FOR ADDITIONAL DETAILS.

SEE TEXT SECTION 6-03.

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SNOHOMISH COUNTY PUBLIC WORKS

6-010

URBAN STANDARD - TRANSITION AT BRIDGE

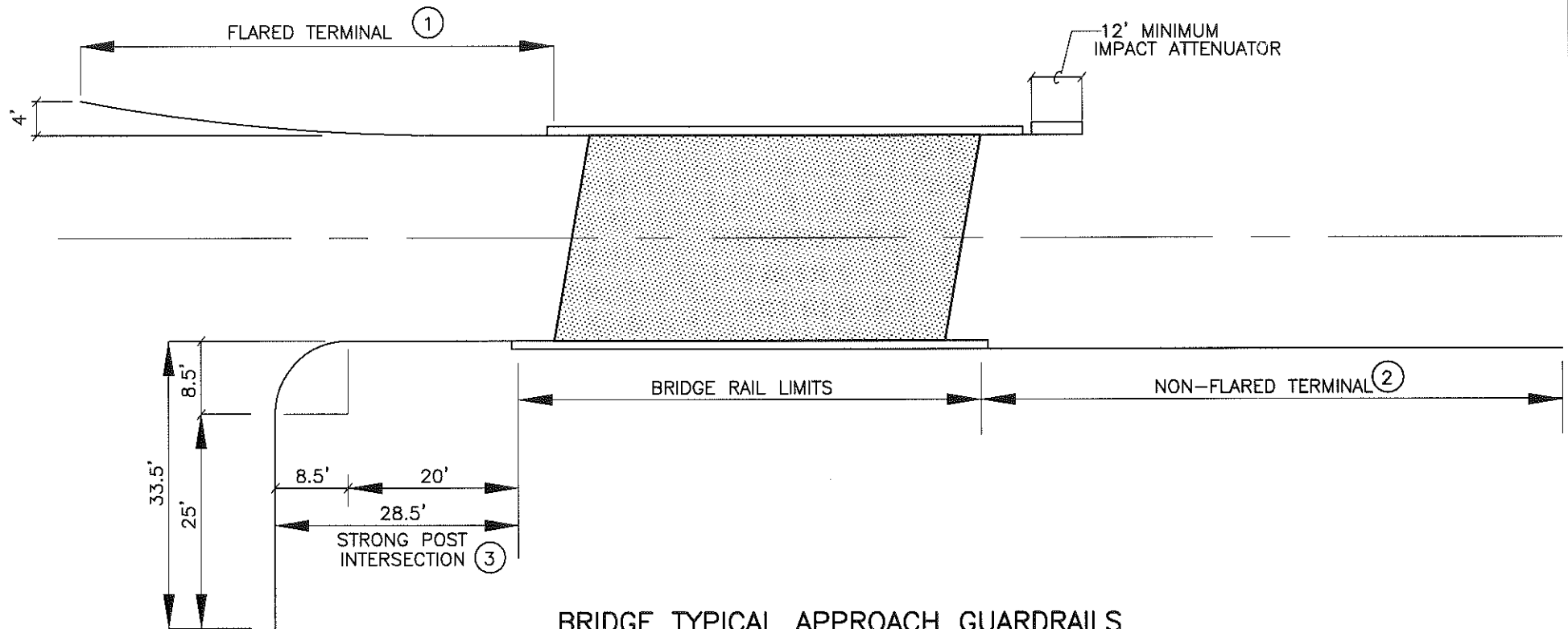
APPROVED BY:

Steve E. Norman

COUNTY ROAD ENGINEER

2-11-03

DATE



BRIDGE TYPICAL APPROACH GUARDRAILS

N.T.S.

NOTES:

1. FLARED TERMINAL PREFERRED. REFER TO WSDOT STANDARD PLANS C-3, C-4B, AND C-5. LENGTH = 50 FT. MIN. FOR POSTED SPEED ≤ 40 MPH. LENGTH = 60 FT. MIN. FOR POSTED SPEED ≥ 45 MPH.
 2. REFER TO WSDOT STANDARD PLANS C-3, C-4E, AND C-5. LENGTH = 50 FT. MIN. FOR POSTED SPEED ≤ 40 MPH. LENGTH = 70 FT. MIN. FOR POSTED SPEED ≥ 45 MPH.
 3. REFER TO WSDOT STANDARD PLAN C-2F.
- SEE TEXT SECTION 6-03.

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SNOHOMISH COUNTY PUBLIC WORKS
6-020 RURAL STANDARD - TRANSITION AT BRIDGE

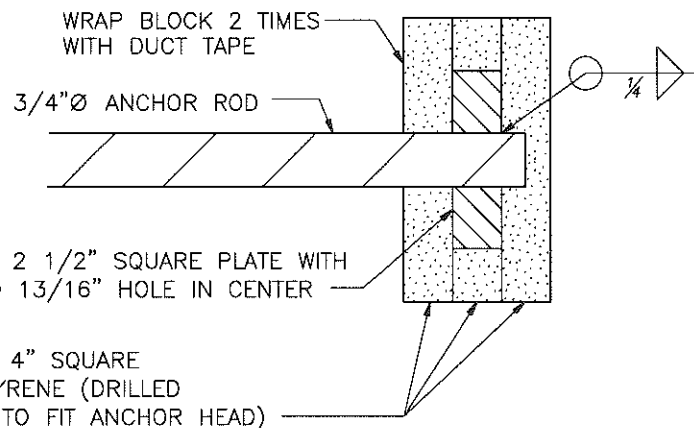
APPROVED BY:

Steven E. Wornen

2-10-03

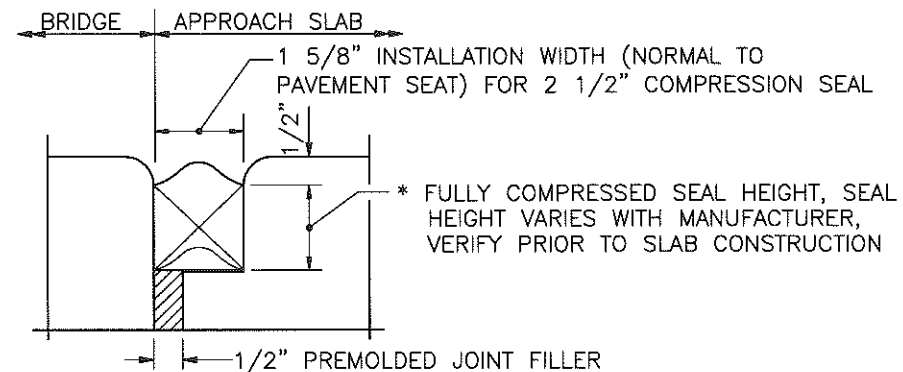
COUNTY ROAD ENGINEER

DATE



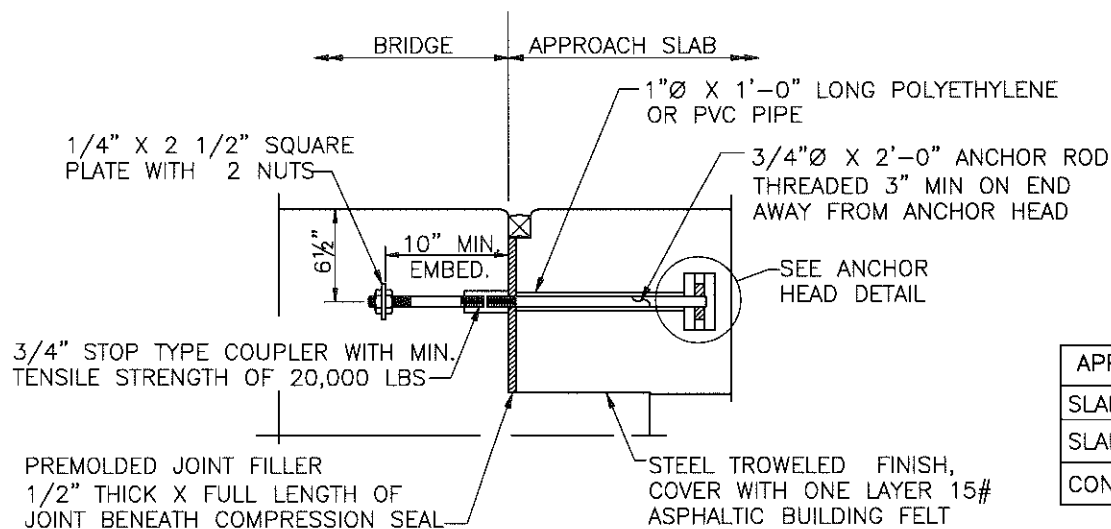
ANCHOR HEAD DETAIL

N.T.S.



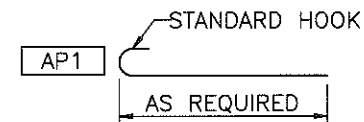
COMPRESSION SEAL DETAIL

N.T.S.



APPROACH ANCHOR DETAIL

SEMI-INTEGRAL TYPE ONLY
N.T.S.



ALL REINFORCING BARS SHOWN ON THIS SHEET SHALL BE AASHTO M-31 UNLESS NOTED OTHERWISE.

G=GALVANIZED REINFORCING STEEL

BENDING DETAIL FOR QUANTITIES

N.T.S.

APPROXIMATE QUANTITIES	AMOUNT	UNIT
SLAB GALVANIZED REINFORCING BARS (TOP MAT)	15.645	LBS/SY
SLAB REINFORCING BARS (BOTTOM MAT)	28.161	LBS/SY
CONCRETE	0.361	CY/SY

NOTE:

PAINT METAL COMPONENTS OF APPROACH ANCHOR WITH ONE COAT OF INORGANIC ZINC OR FORMULA A-11-99 PAINT IN ACCORDANCE WITH STD. SPEC. 9-08.2.

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SNOHOMISH COUNTY PUBLIC WORKS

6-030B

TYPICAL BRIDGE APPROACH SLAB

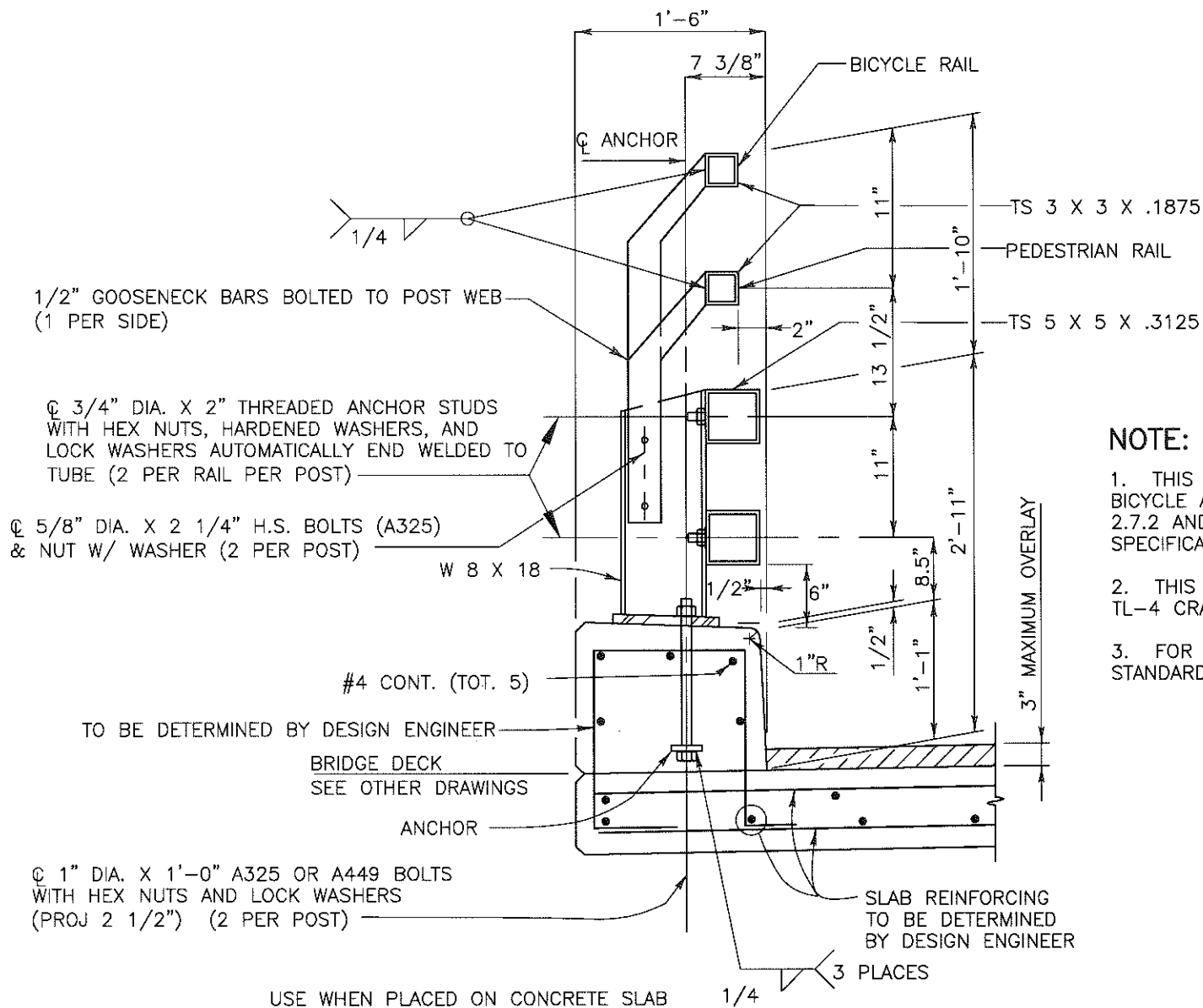
APPROVED BY:

Steve E. Murren

COUNTY ROAD ENGINEER

2-10-03

DATE



NOTE:

1. THIS RAIL MEETS ALL REQUIREMENTS FOR BICYCLE AND PEDESTRIAN RAILS PER SECTIONS 2.7.2 AND 2.7.3. OF AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
2. THIS RAIL IS CERTIFIED BY FHWA FOR LEVEL TL-4 CRASH WORTHINESS.
3. FOR CONNECTION TO GUARDRAIL USE WSDOT STANDARD PLANS C-7A AND C-3 TYPE 1A.

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6-040

SNOHOMISH COUNTY PUBLIC WORKS

STANDARD BRIDGE RAIL

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Stewart E. Norman

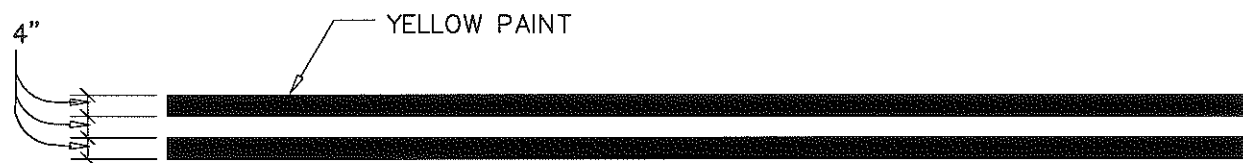
COUNTY ROAD ENGINEER

2-10-03

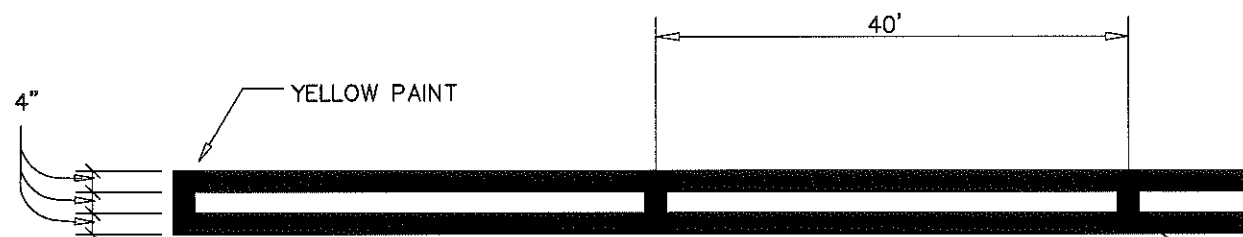
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CHAPTER 7 DRAWING INDEX

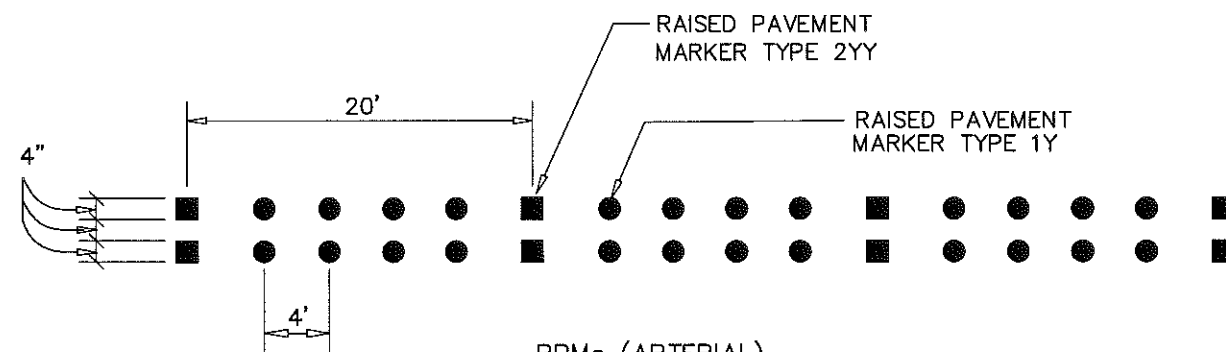
7-010	Centerlines
7-020	Centerlines
7-030	Centerlines
7-040	Two Way Left Turn Lane
7-050	Lane Lines/Drop Lane Stripes
7-060	Typical Lane Reduction Transition Markings
7-070	Walkway and Edge Lines
7-080	Bike Lane Stripe/Markings
7-090	Gore Stripes
7-100	Stop Bars
7-110	Crosswalk Detail
7-120	Railroad Crossing
7-130	Pavement Markings
7-140	Misc. Pavement Markings (Typical)
7-150	Bus Pullout Markings
7-160A	Raised Pedestrian Crosswalk
7-160B	Raised Pedestrian Crosswalk Sections
7-160C	Raised Pedestrian Crosswalk Details
7-170	Speed Hump



DOUBLE NO PASS PAINT CENTER LINE (NON-ARTERIAL)



PAINT & RPMs (ARTERIAL)



PASSING PROHIBITED

GENERAL NOTES:

1. PAINT IS USED FOR PAVEMENT MARKINGS ON NON-ARTERIAL ROADS.
2. RAISED PAVEMENT MARKERS (RPMs) OR A COMBINATION OF PAINT AND RPMs ARE USED ON ARTERIAL ROADS.
3. CENTERLINE MARKINGS SHALL BE PLACED ON URBAN ARTERIALS AND COLLECTORS GREATER THAN 20 FEET WIDE WITH ADT>6000. CENTERLINE MARKINGS SHALL ALSO BE PLACED ON ALL ROADS WITH THREE OR MORE TRAFFIC LANES.

NOTE:

TWO-DIRECTION NO-PASSING ZONE MARKINGS CONSIST OF TWO NORMAL SOLID YELLOW LINES. USED WHERE CROSSING THE CENTERLINE MARKINGS FOR PASSING IS PROHIBITED FOR TRAFFIC TRAVELING IN EITHER DIRECTION.

03/20/01

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SNOHOMISH COUNTY PUBLIC WORKS

7-010

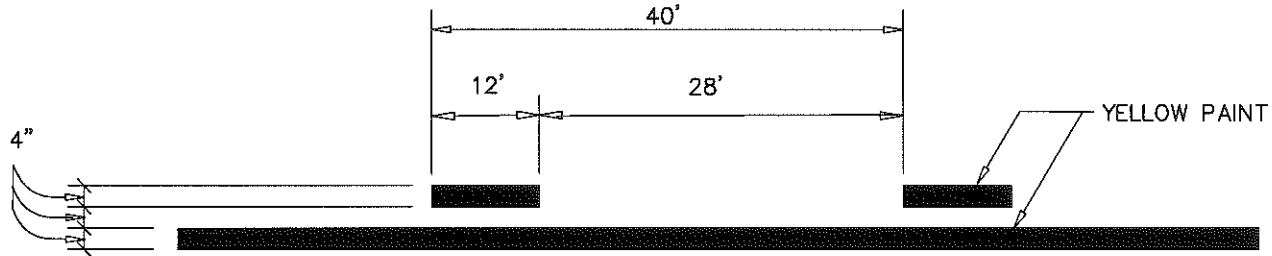
CENTERLINES

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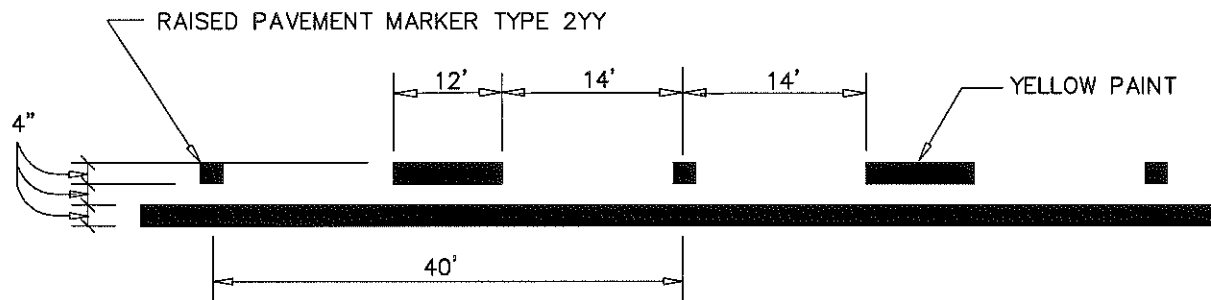
Stewart Norman 2-10-03

COUNTY ROAD ENGINEER

DATE



PAINT (NON-ARTERIAL)



PAINT & RPM (ARTERIAL)

TWO-LANE, TWO-WAY TRAVEL
WITH PASSING RESTRICTED

NOTE:

ONE-DIRECTION NO-PASSING ZONE MARKINGS CONSIST OF A NORMAL BROKEN YELLOW LINE AND A NORMAL SOLID YELLOW LINE. USED WHERE CROSSING THE CENTERLINE MARKINGS FOR PASSING WITH CARE IS PERMITTED FOR THE TRAFFIC TRAVELING ADJACENT TO THE BROKEN LINE, BUT IS PROHIBITED FOR TRAFFIC TRAVELING ADJACENT TO THE SOLID LINE.

03/20/01

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SNOHOMISH COUNTY PUBLIC WORKS

7-020

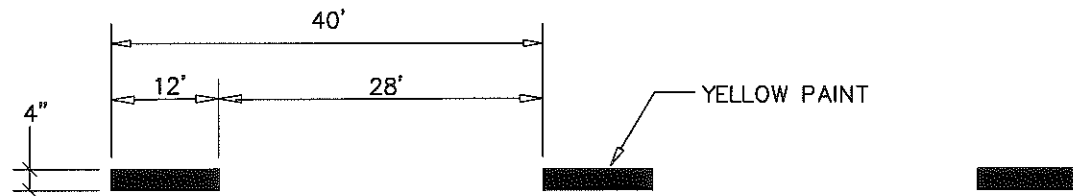
CENTERLINES

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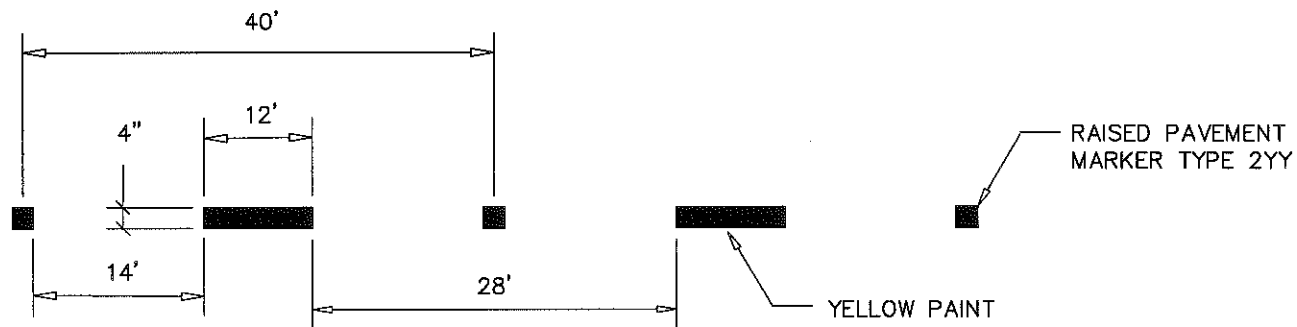
Steve E. Thorne 2-10-03

COUNTY ROAD ENGINEER

DATE



PAINT (NON-ARTERIAL)



PAINT AND RPM (ARTERIAL)

TWO-LANE, TWO-WAY TRAVEL
WITH PASSING PERMITTED

03/20/01

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SNOHOMISH COUNTY PUBLIC WORKS

7-030

CENTERLINES

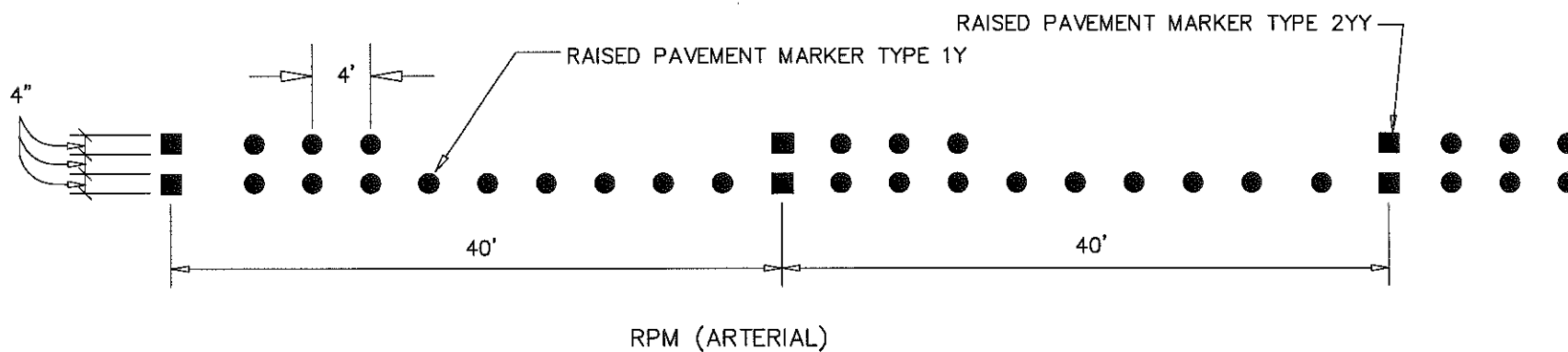
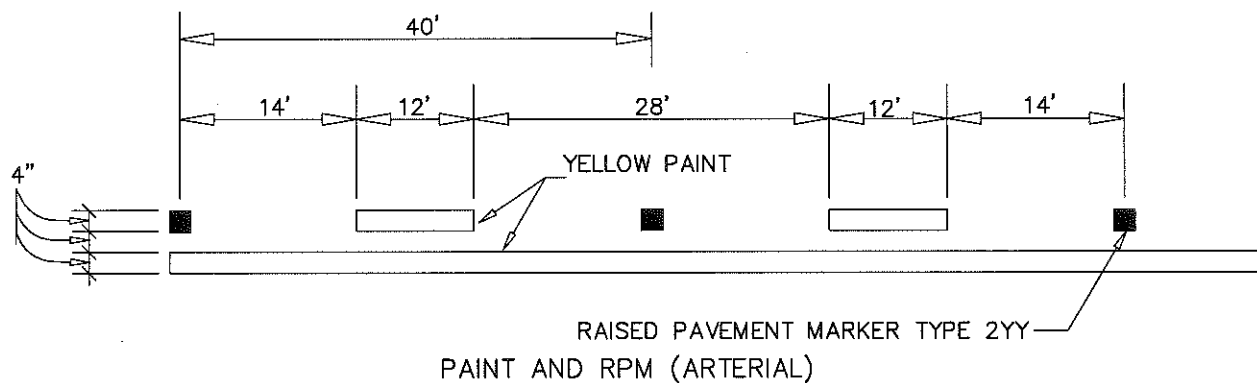
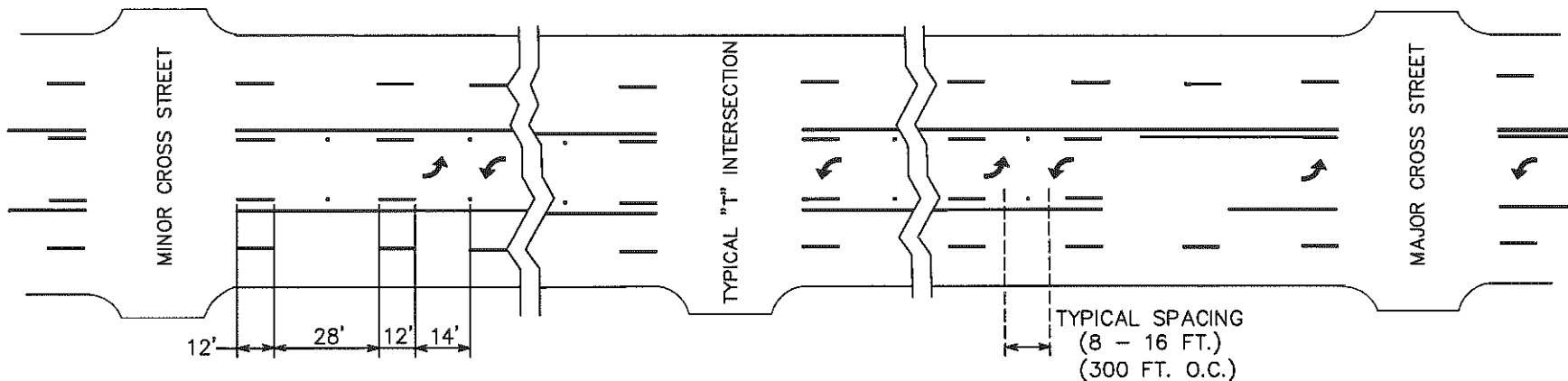
APPROVED BY:

Steve E. Horne

21003

COUNTY ROAD ENGINEER

DATE



03/20/01
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SNOHOMISH COUNTY PUBLIC WORKS

7-040

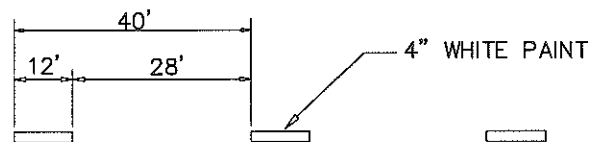
TWO WAY LEFT TURN LANE

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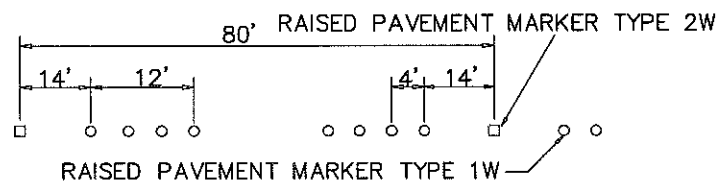
Steven E. Monahan 2-10-03

COUNTY ROAD ENGINEER

DATE

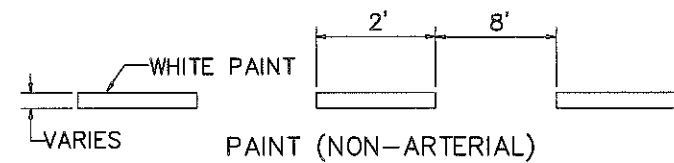


PAINT (NON-ARTERIAL)

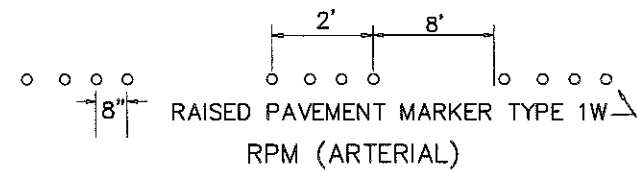


RPM (ARTERIAL)

LANE LINES



PAINT (NON-ARTERIAL)



RPM (ARTERIAL)

DROP LANE STRIPES



SNOHOMISH COUNTY PUBLIC WORKS

7-050

LANE LINES/DROP LANE STRIPES

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Steve E. Norman

COUNTY ROAD ENGINEER

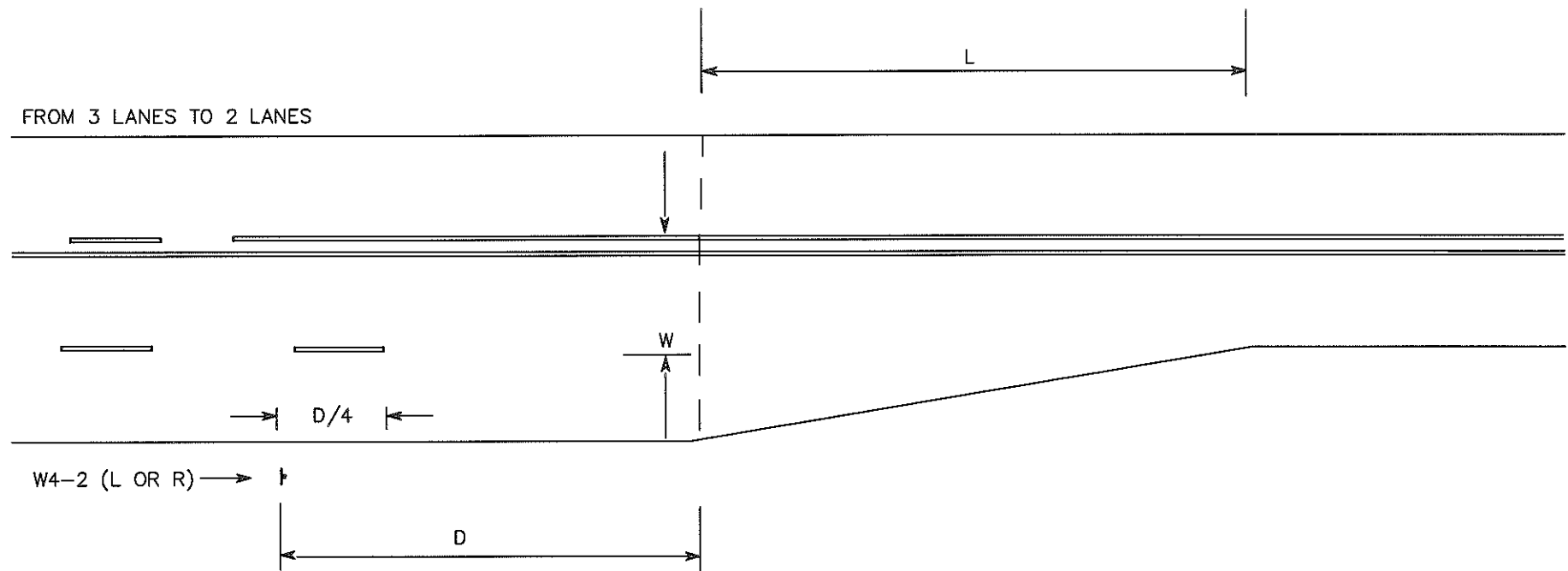
2-10-03

DATE

03/20/01

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FROM 3 LANES TO 2 LANES



STANDARD:

THE MINIMUM TAPER LENGTH SHALL BE 100 FEET IN URBAN AREAS AND 200 FEET IN RURAL AREAS.

FORMULA WHEN POSTED SPEED IS:

≥45 MPH, $L=WS$.

<45 MPH, $L=WS^2/60$.

VARIABLE LEGEND:

L=LENGTH IN FEET

S=POSTED SPEED OR 85th-PERCENTILE SPEED, WHICHEVER IS GREATER.

W=OFFSET IN FEET

D=ADVANCE WARNING DISTANCE. SEE SECTION 2C.05 OF MUTCD FOR PLACEMENT.

03/20/01
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SNOHOMISH COUNTY PUBLIC WORKS

7-060 TYPICAL LANE REDUCTION TRANSITION MARKINGS

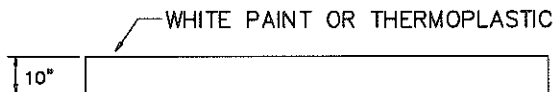
APPROVED BY:

Steve E. Morrison

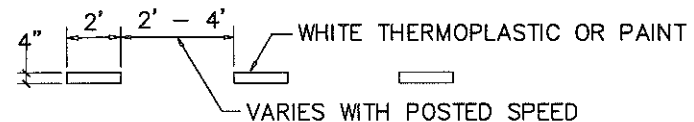
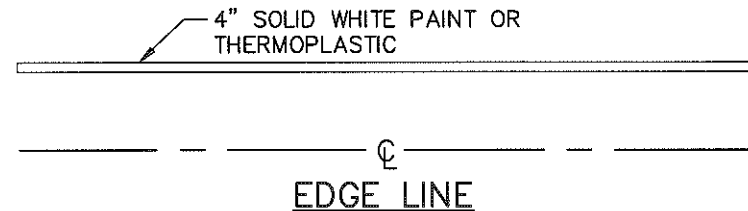
2-10-03

COUNTY ROAD ENGINEER

DATE



WALKWAY LINE



SKIP EDGE LINE

NOTE:

1. EDGE LINE MARKINGS SHALL BE PLACED ON PAVED ARTERIALS WITH A TRAVELED WAY OF 17 FEET OR WIDER.
2. EDGE LINE MARKINGS SHALL BE PLACED ON PAVED ROADS OR HIGHWAYS WITH THE FOLLOWING CHARACTERISTICS: RURAL ARTERIALS AND COLLECTORS WITH A TRAVELED WAY OF 20 FEET OR WIDER AND AN ADT >3,000
3. EDGE LINE MARKINGS MAY BE PLACED ON ROADS AND HIGHWAYS THAT DO NOT HAVE CENTERLINE MARKINGS.

03/20/01

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SNOHOMISH COUNTY PUBLIC WORKS

7-070

WALKWAY AND EDGE LINES

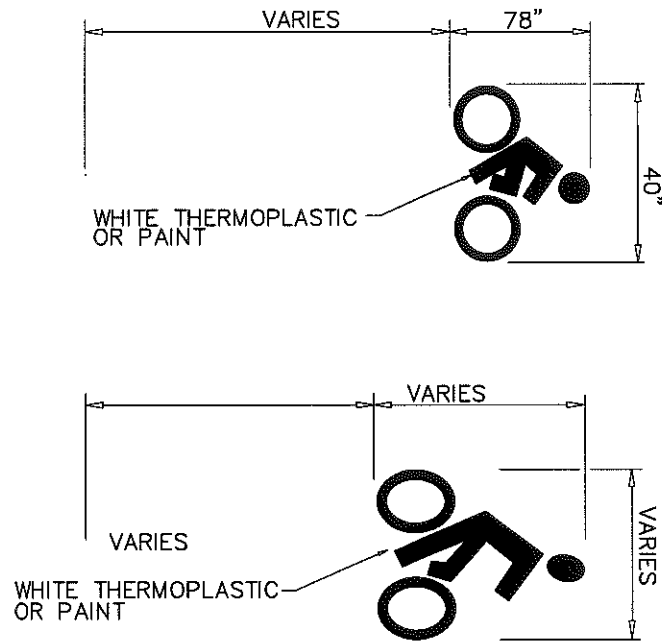
APPROVED BY:

Stewart Morrison

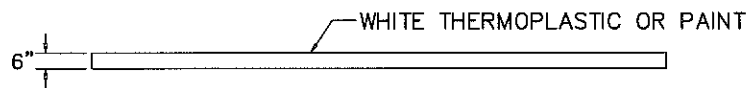
COUNTY ROAD ENGINEER

2-10-03

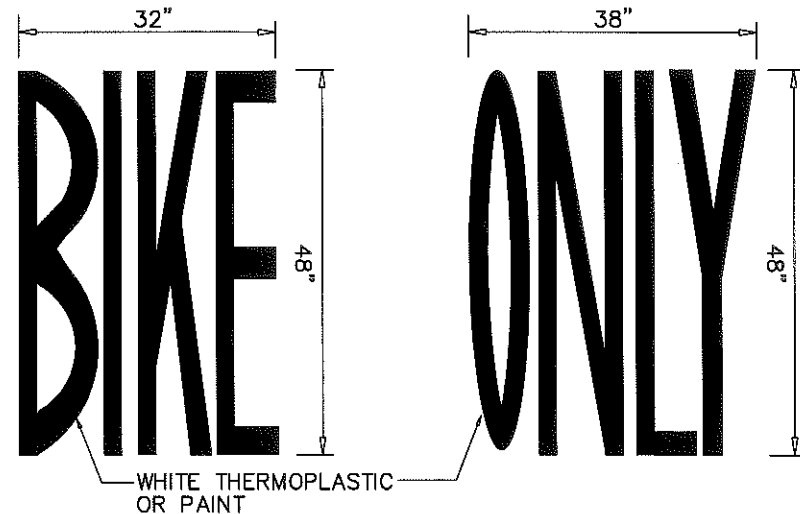
DATE



WHEN BICYCLE LANE IS <6' WIDE
SYMBOLS



STRIPE



WORD MARKINGS

NOTE:

1. BICYCLE LANE MARKINGS SHALL BE USED IN CONJUNCTION WITH BICYCLE LANE SIGNAGE.
2. BICYCLE LANE SIGNS (R3-16) SHALL BE USED IN ADVANCE OF THE BEGINNING OF A MARKED BICYCLE LANE.

03/20/01

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SNOHOMISH COUNTY PUBLIC WORKS

7-080

BIKE LANE STRIPE/MARKINGS

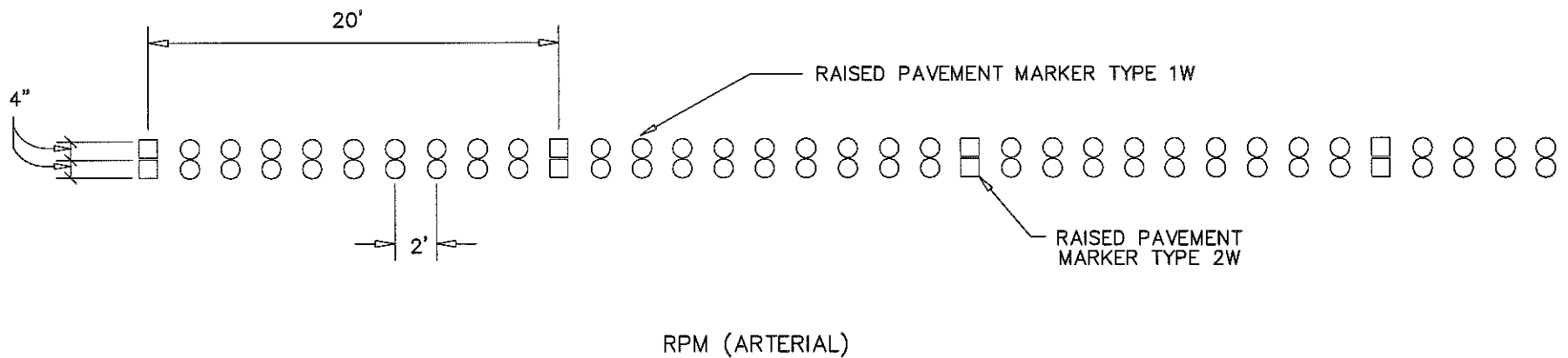
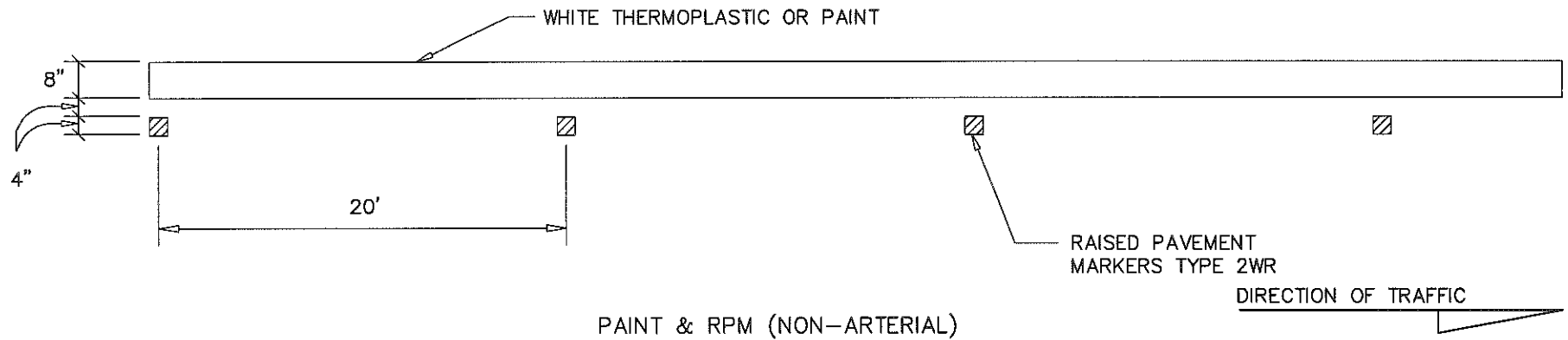
APPROVED BY:

Steve E. Thomsen

COUNTY ROAD ENGINEER

2-10-03

DATE



03/20/01
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SNOHOMISH COUNTY PUBLIC WORKS

7-090

GORE STRIPES

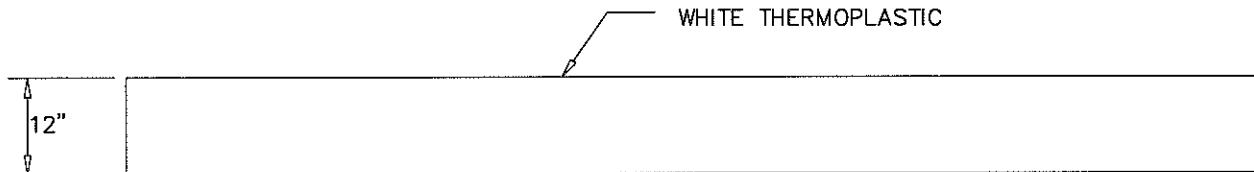
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Steven E. Norman

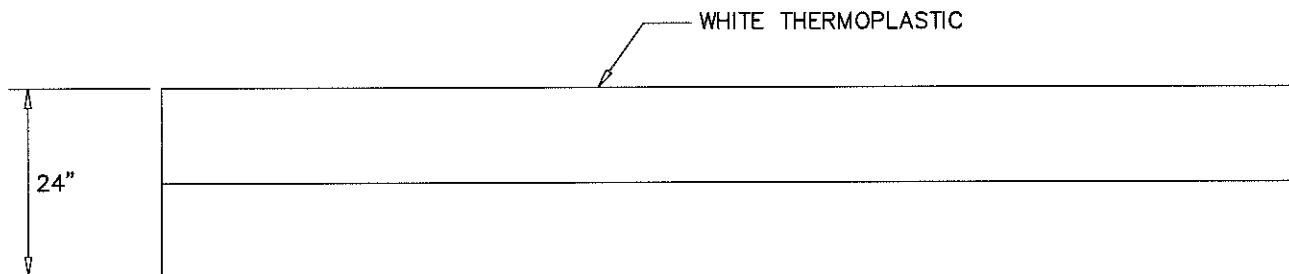
COUNTY ROAD ENGINEER

2-10-03

DATE



NON-ARTERIAL



ARTERIAL

03/20/01

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SNOHOMISH COUNTY PUBLIC WORKS

7-100

STOP BARS

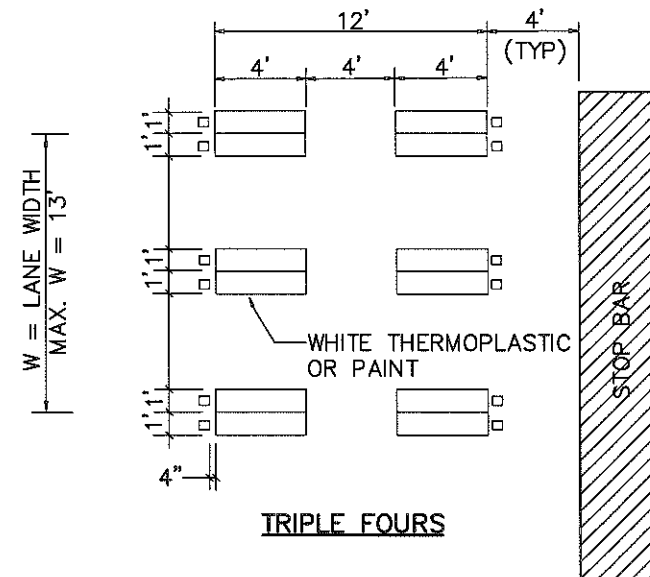
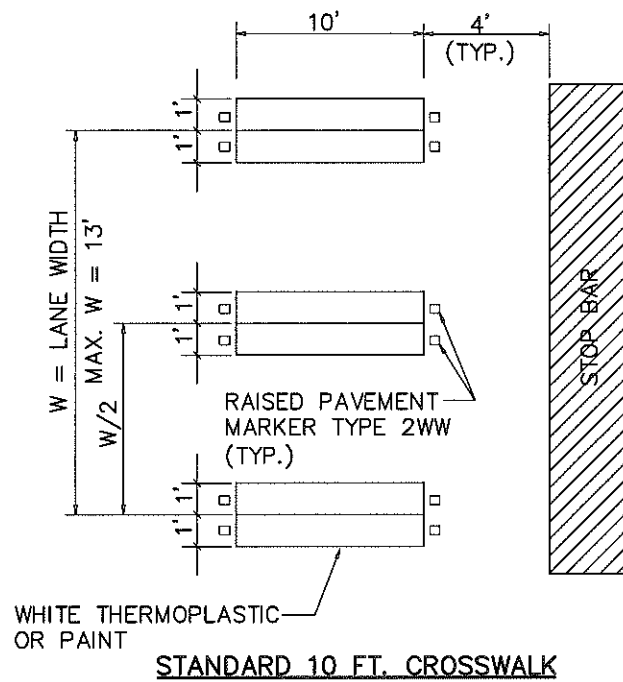
APPROVED BY:

Steve E. Norman

COUNTY ROAD ENGINEER

2-10-03

DATE



SNOHOMISH COUNTY PUBLIC WORKS

7-110

CROSSWALK DETAIL

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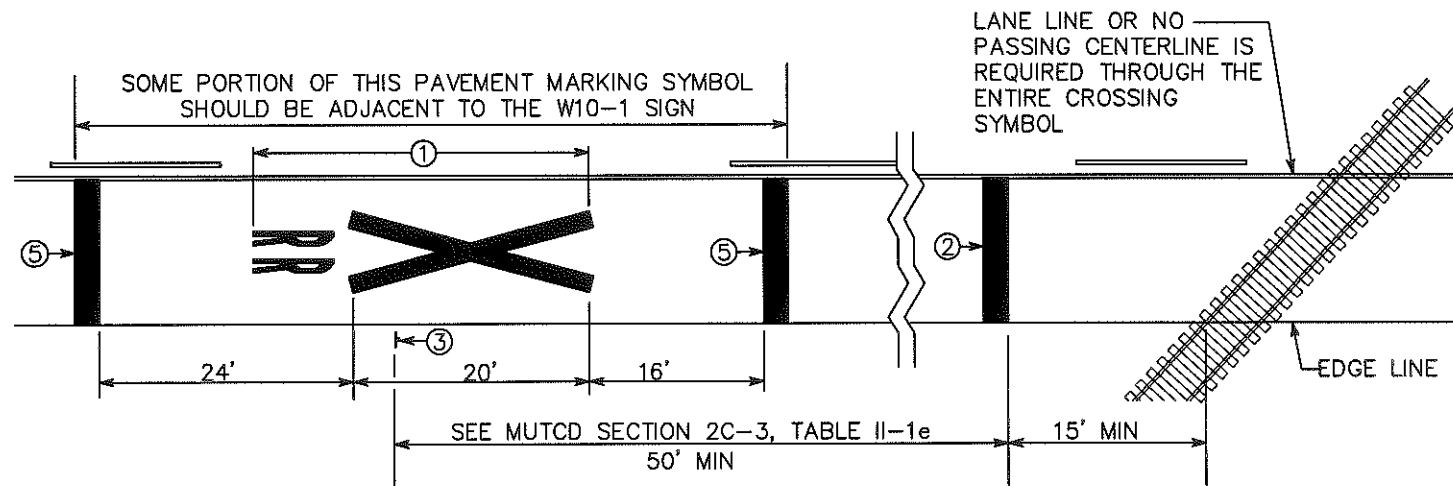
APPROVED BY:

Steven E. Horne 2-10-03

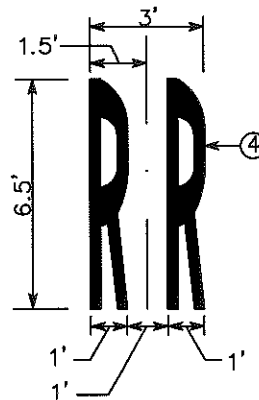
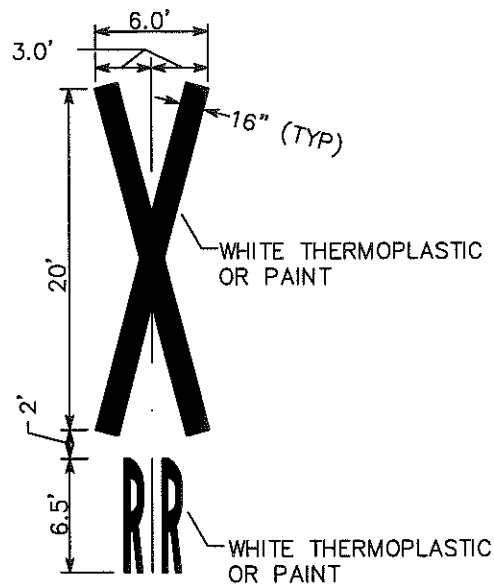
COUNTY ROAD ENGINEER

DATE

03/20/01



RAILROAD - HIGHWAY GRADE CROSSINGS
PAVEMENT MARKING PLACEMENT DETAIL



KEY

- ① RR CROSSING SYMBOL
- ② 24" STOP BAR
- ③ W10-1 ADVANCE WARNING SIGN
- ④ SEE "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKING"
- ⑤ 24" TRANSVERSE MARKING.

SYMBOL DETAILS

03/20/01
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SNOHOMISH COUNTY PUBLIC WORKS

7-120

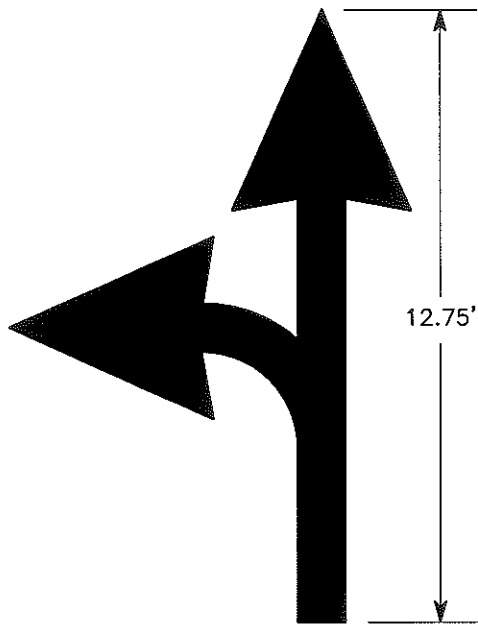
RAILROAD CROSSING

APPROVED BY:

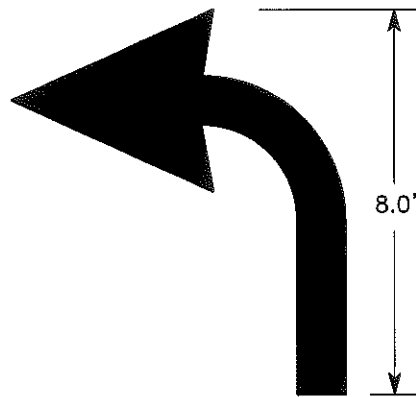
Steven E. Hansen 2-10-03

COUNTY ROAD ENGINEER

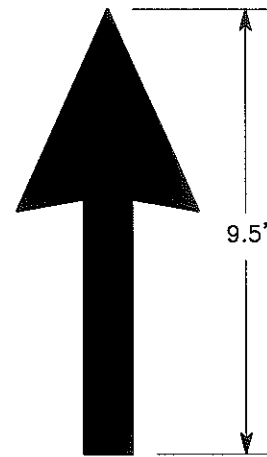
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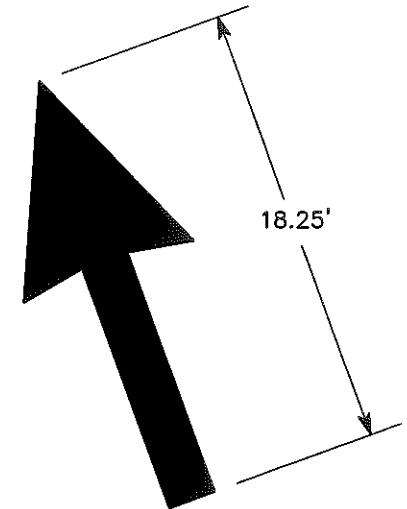
TURN AND THROUGH LANE-USE
ARROW



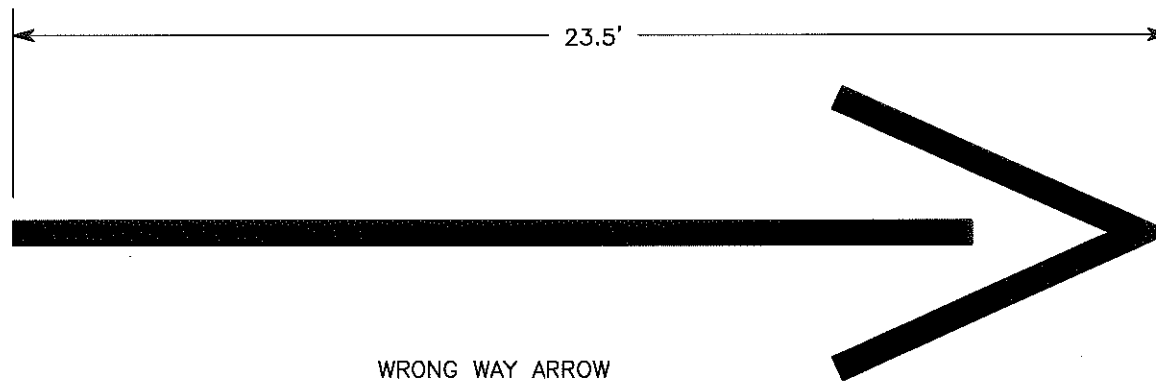
TURN LANE-USE ARROW



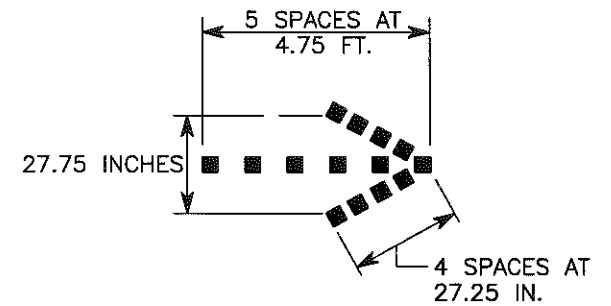
THROUGH LANE-USE ARROW



LANE-REDUCTION ARROW



WRONG WAY ARROW



WRONG-WAY ARROW USING
RETROREFLECTIVE RAISED
PAVEMENT MARKERS

03/20/01

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SNOHOMISH COUNTY PUBLIC WORKS

7-130

PAVEMENT MARKINGS

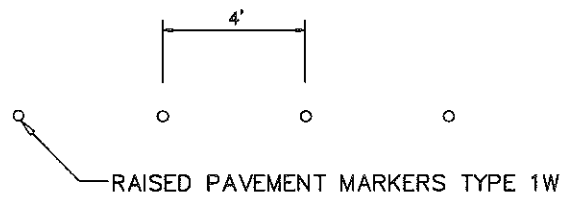
APPROVED BY:

Stewart E. Thorne

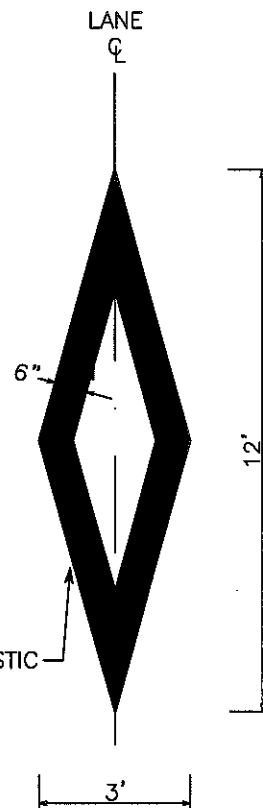
COUNTY ROAD ENGINEER

2-10-03

DATE



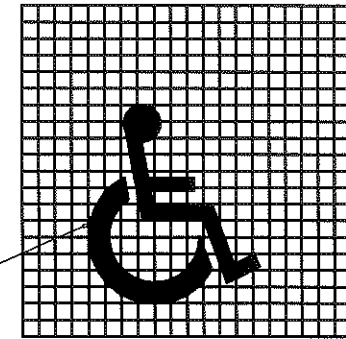
GUIDE SPOTS



WHITE THERMOPLASTIC
OR PAINT

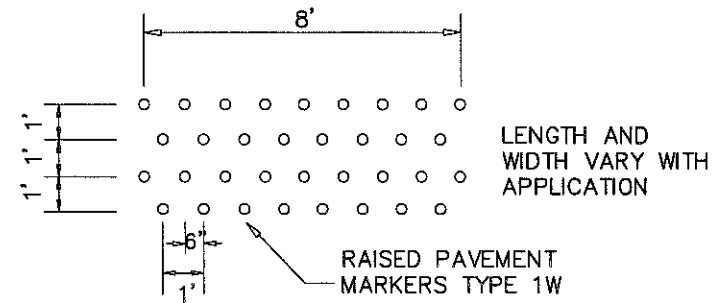
PREFERENTIAL LANE SYMBOL

WHITE THERMOPLASTIC
OR PAINT



HANDICAPPED PARKING

STALL SYMBOL



RUMBLE STRIP

03/20/01

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SNOHOMISH COUNTY PUBLIC WORKS

7-140

MISC. PAVEMENT MARKINGS (TYPICAL)

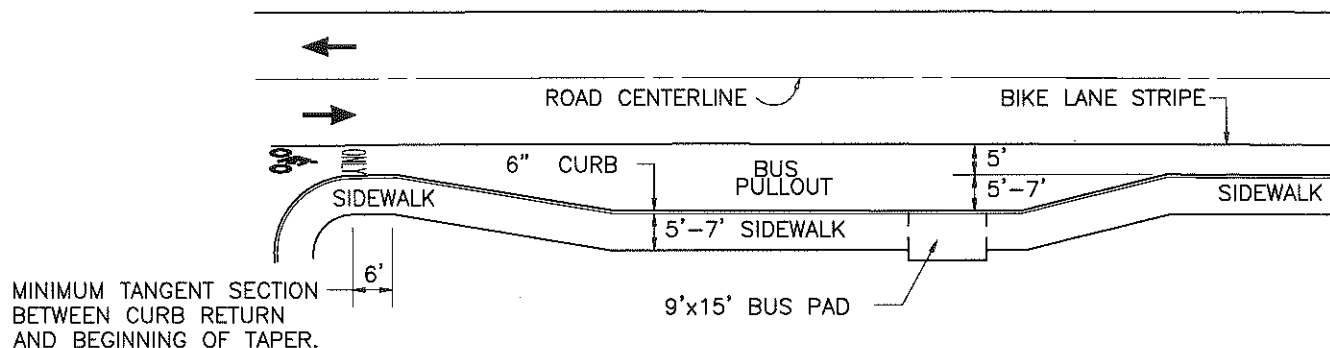
APPROVED BY:

Steven E. Norman

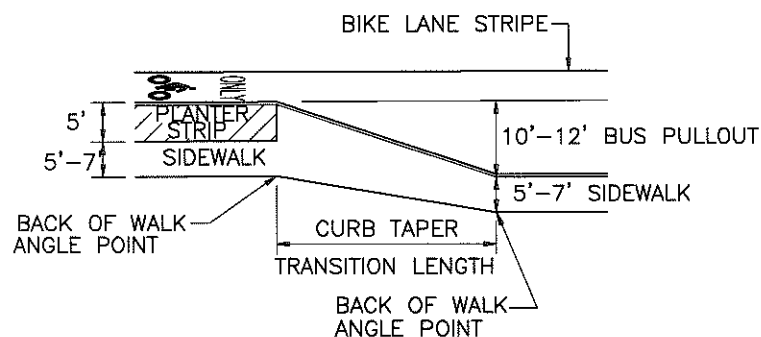
COUNTY ROAD ENGINEER

2-10-03

DATE



PULLOUT WITH SHARED BICYCLE LANE



PULLOUT WITH SEPARATED BICYCLE LANE

NOTES:

1. FAR-SIDE BUS STOPS ARE PREFERRED ALTERNATIVE. NEAR-SIDE OR MID-BLOCK LOCATIONS MAY BE APPROVED ON A CASE BY CASE BASIS. REFER TO WSDOT DESIGN MANUAL, CHAPTER 1060.
2. THIS DRAWING REPRESENTS A TYPICAL DESIGN FOR PAVEMENT MARKINGS. BUS PULLOUT DESIGN DETAILS ARE PROVIDED IN TEXT SECTION 3-13 AND STANDARD DRAWING 3-160.

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SNOHOMISH COUNTY PUBLIC WORKS

7-150

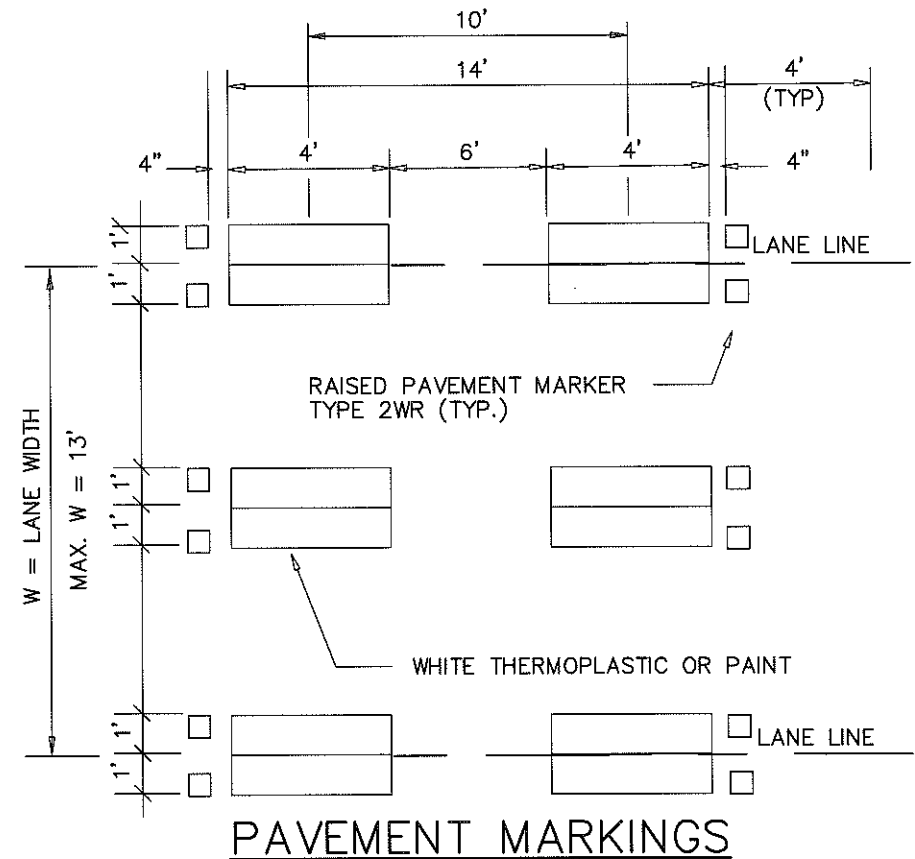
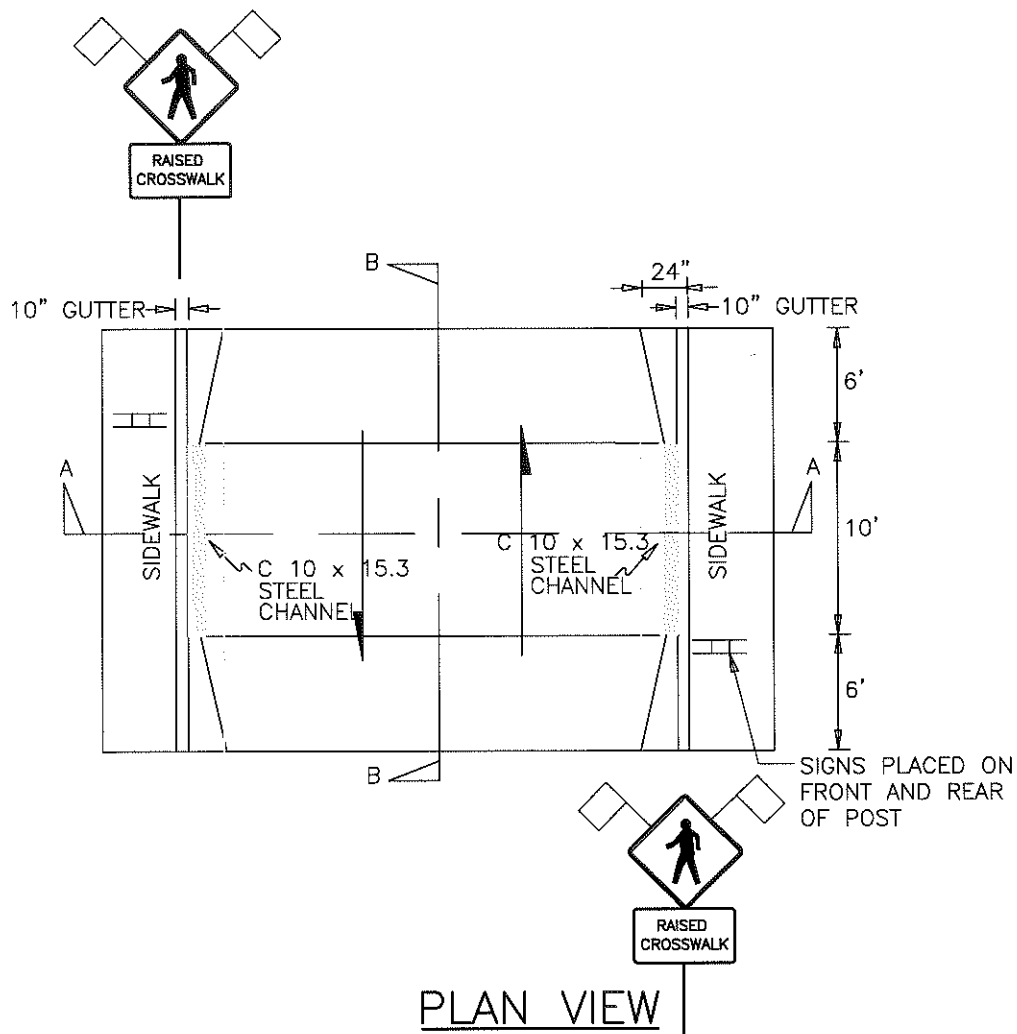
BUS PULLOUT MARKINGS

APPROVED BY:

Steve E. Norman 477-03

COUNTY ROAD ENGINEER

DATE



NOTES:

1. ADVANCE WARNING SIGNS SHALL BE PLACED A MINIMUM OF 150 FEET IN ADVANCE OF THE CROSSWALK.
2. SECTIONS A-A AND B-B ARE SHOWN ON STANDARD DRAWINGS 7-160B AND 7-160C RESPECTIVELY.

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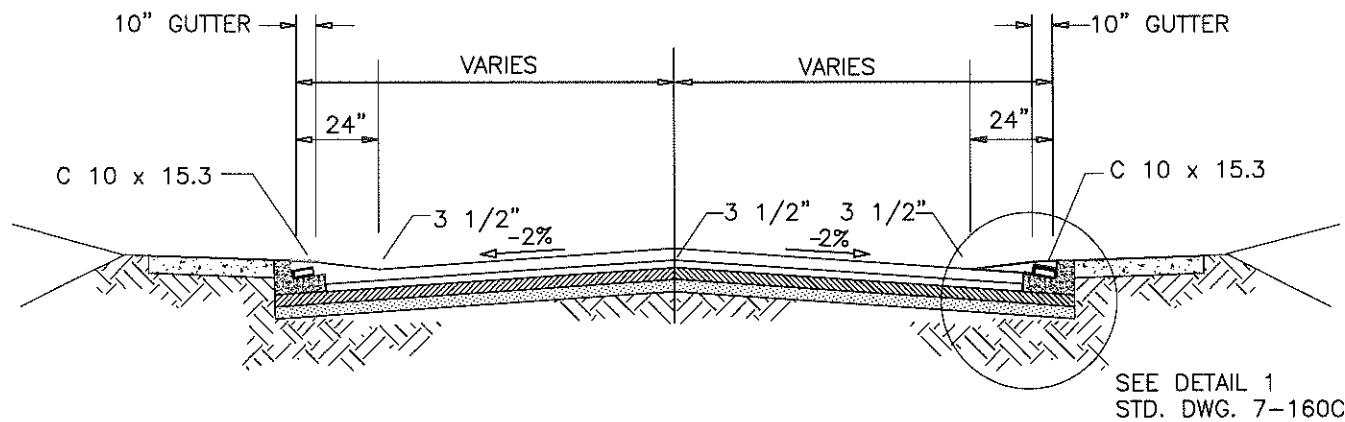
SNOHOMISH COUNTY PUBLIC WORKS

7-160A

RAISED PEDESTRIAN CROSSWALK

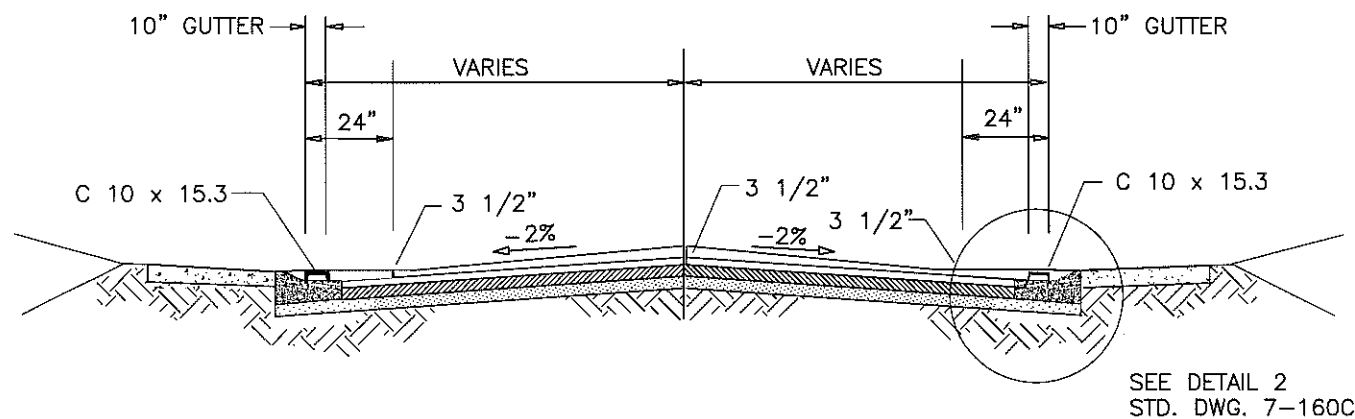
APPROVED BY:

Steve E. Hansen 4-17-03
COUNTY ROAD ENGINEER DATE



OPTION 1 VERTICAL CURB

N.T.S.



OPTION 2 ROLLED CURB

N.T.S.

NOTE:

ROLLED CURB MAY BE USED ONLY IN RURAL AREAS WHERE SPECIFICALLY APPROVED BY THE ENGINEER. OPTION 2 IS PROVIDED FOR RETROFIT PROJECTS.

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SNOHOMISH COUNTY PUBLIC WORKS

7-160B

RAISED PEDESTRIAN CROSSWALK SECTIONS

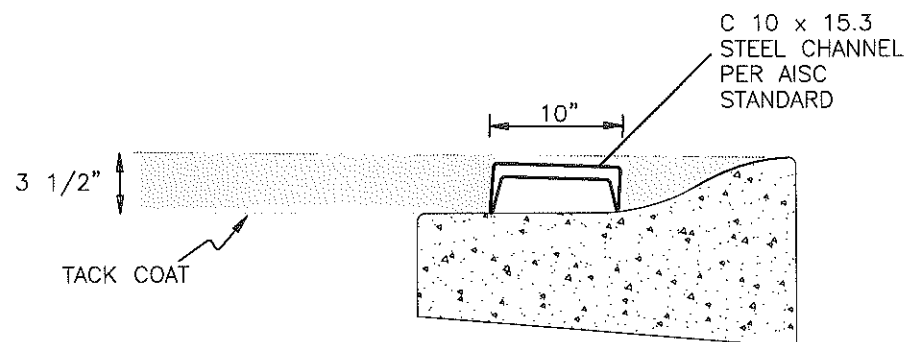
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Steve Elmore

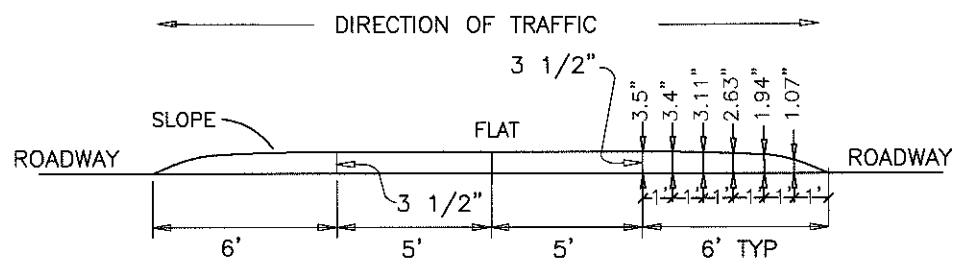
COUNTY ROAD ENGINEER

4-17-03

DATE



DETAIL 2
ROLLED CURB AND STEEL CHANNEL
N.T.S.



C 10 X 15.3
CHANNEL DETAIL
N.T.S.

ROLLED CURB MAY BE USED ONLY IN RURAL AREAS WHERE SPECIFICALLY APPROVED BY THE ENGINEER. DETAIL 2 IS PROVIDED FOR RETROFIT PROJECTS.

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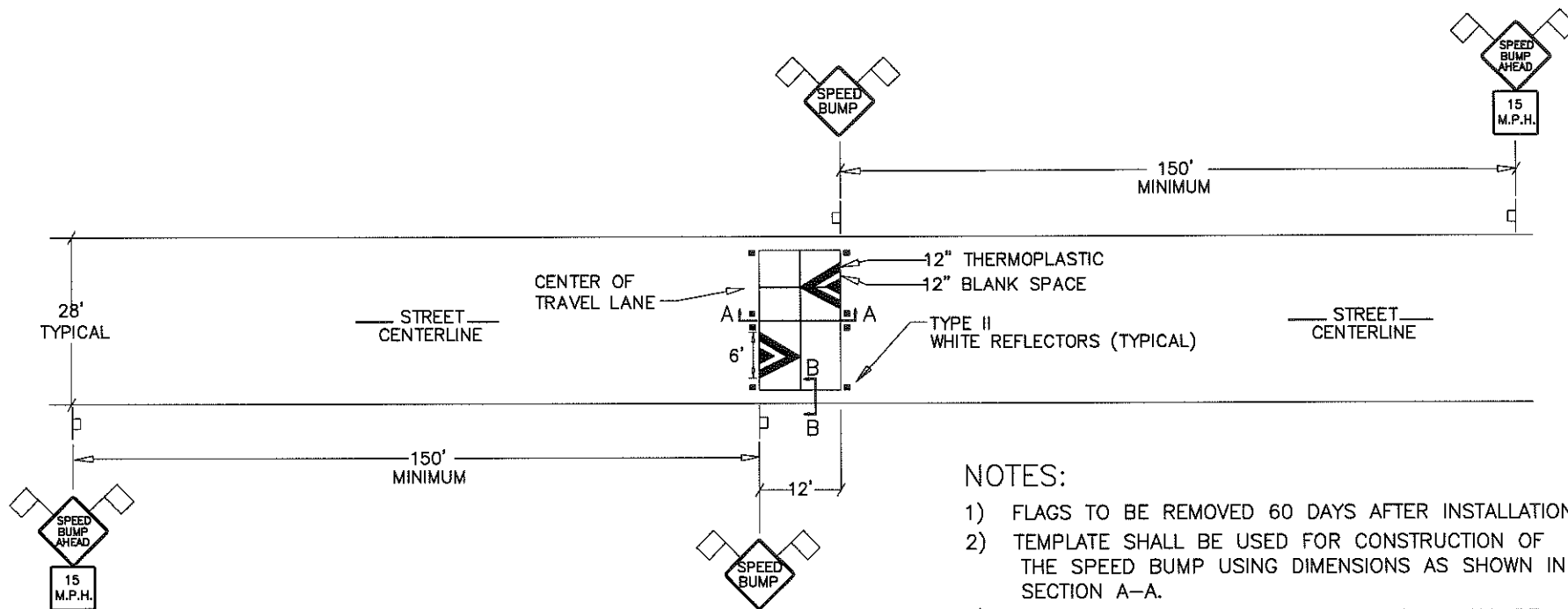
SNOHOMISH COUNTY PUBLIC WORKS

7-160C

RAISED PEDESTRIAN CROSSWALK DETAILS

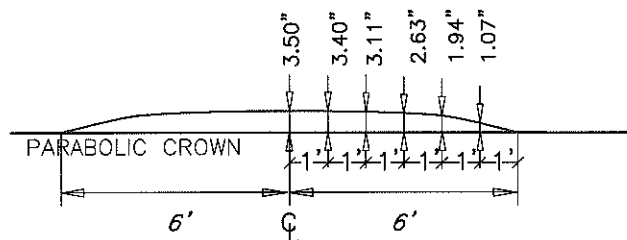
APPROVED BY:

Steve Norman 4-17-03
COUNTY ROAD ENGINEER DATE



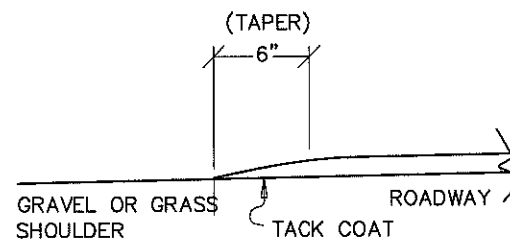
NOTES:

- 1) FLAGS TO BE REMOVED 60 DAYS AFTER INSTALLATION.
- 2) TEMPLATE SHALL BE USED FOR CONSTRUCTION OF THE SPEED BUMP USING DIMENSIONS AS SHOWN IN SECTION A-A.
- 3) MAXIMUM HEIGHT AT PARABOLIC CROWN SHALL BE NO MORE THAN 3.50 INCHES AFTER COMPACTION WITH AN ACCEPTABLE TOLERANCE TO A MINIMUM OF 3.25".



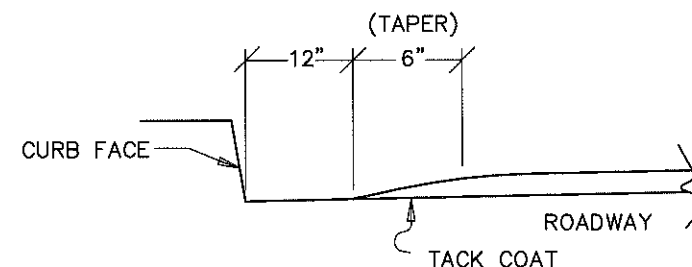
SECTION A-A

NOT TO SCALE



SECTION B-B
SHOULDER DETAIL FOR
STREETS WITHOUT CURBS

NOT TO SCALE



SECTION B-B
SHOULDER DETAIL FOR
STREETS WITH CURBS

NOT TO SCALE

SPEED BUMP MARKINGS SHALL BE A SERIES OF WHITE MARKINGS PLACED ON A SPEED BUMP TO IDENTIFY ITS LOCATION.

APPROPRIATE ADVANCE WARNING SIGNS SHALL BE USED IN CONFORMANCE WITH SECTION 2C.22 OF THE M.U.T.C.D.

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SNOHOMISH COUNTY PUBLIC WORKS

7-170

SPEED HUMP

APPROVED BY:

Stuart E. Hornsaw 4-17-03

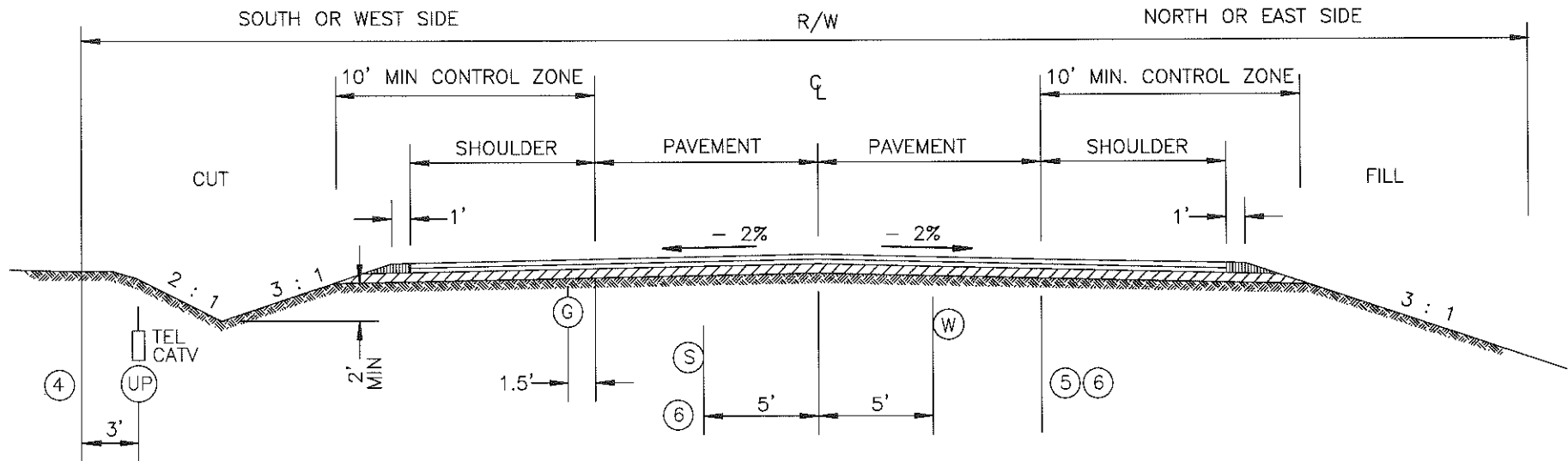
COUNTY ROAD ENGINEER

DATE

CHAPTER 8 DRAWING INDEX

8-010	Typical Utility Locations - Shoulder Section
8-020	Typical Utility Locations - Curb Section
8-030	Utility Trench Restoration and Backfill
8-040	General R/W Restoration Requirements

UTILITY LOCATIONS SHOWN ARE FOR NEW CONSTRUCTION. INSTALLATIONS WITHIN EXISTING ROADS MAY VARY AND WILL BE EVALUATED AT THE UTILITY PERMIT STAGE ON A CASE BY CASE BASIS. NO UTILITY SHALL BE LOCATED DIRECTLY BELOW A ROADSIDE DITCH OR SWALE.



NOTES:

1. MINIMUM COVER AND SEPARATION FOR FIBEROPTICS, SANITARY SEWER, WATER, GAS, POWER AND NON-FIBEROPTICS TELEPHONE AND CABLE TELEVISION SHALL BE IN COMPLIANCE WITH FEDERAL AND STATE REGULATIONS.
2. POWER POLES AND OTHER ABOVE GROUND UTILITY OBJECTS SHALL BE PLACED OUTSIDE CONTROL ZONE AREAS UNLESS (1) JUSTIFIED TO THE ENGINEER'S SATISFACTION BY SUITABLE ENGINEERING STUDIES CONSIDERING TRAFFIC SAFETY (2) SHIELDED BY A BARRIER, (3) PLACED IN AN AREA NORMALLY INACCESSIBLE TO VEHICLES OR (4) UTILIZING A BREAKAWAY DESIGN. INSTALLATION OF POWER POLES AND OTHER ABOVE GROUND UTILITY OBJECTS WILL NOT BE PERMITTED IN SIDEWALKS OR WALKWAYS.
3. CONTROL ZONE DISTANCES SHOWN APPLY TO ROADS WITH A POSTED SPEED OF 35 MPH OR LESS. CONTROL ZONE DISTANCES FOR ROADS POSTED AT GREATER THAN 35 MPH SHOULD BE DETERMINED ACCORDING TO CHAPTER 710, TRAFFIC BARRIERS, OF THE WSDOT DESIGN MANUAL.
4. POWER, TELEPHONE, CABLE TV AND GAS MAY SHARE THE SAME TRENCH IN RESIDENTIAL PLATS.
5. WATER LINE PREFERRED BENEATH SHOULDER. IF NOT PRACTICAL LOCATE AS SHOWN.
6. SANITARY SEWER AND WATER LINES SHALL HAVE 10 FT. MINIMUM HORIZONTAL SEPARATION AND 1.5 FT. MINIMUM VERTICAL SEPARATION FROM BOTTOM OF WATER LINE TO CROWN OF SEWER. REFER TO DOE "CRITERIA FOR SEWAGE WORKS DESIGN."

SEE TEXT SECTION 8-02

KEY

- (UP) UNDERGROUND POWER
- TEL CATV TELEPHONE, CABLE TELEVISION
- (G) GAS
- (S) SANITARY SEWER
- (W) WATER
- STORM SEWER NOT SHOWN



SNOHOMISH COUNTY PUBLIC WORKS

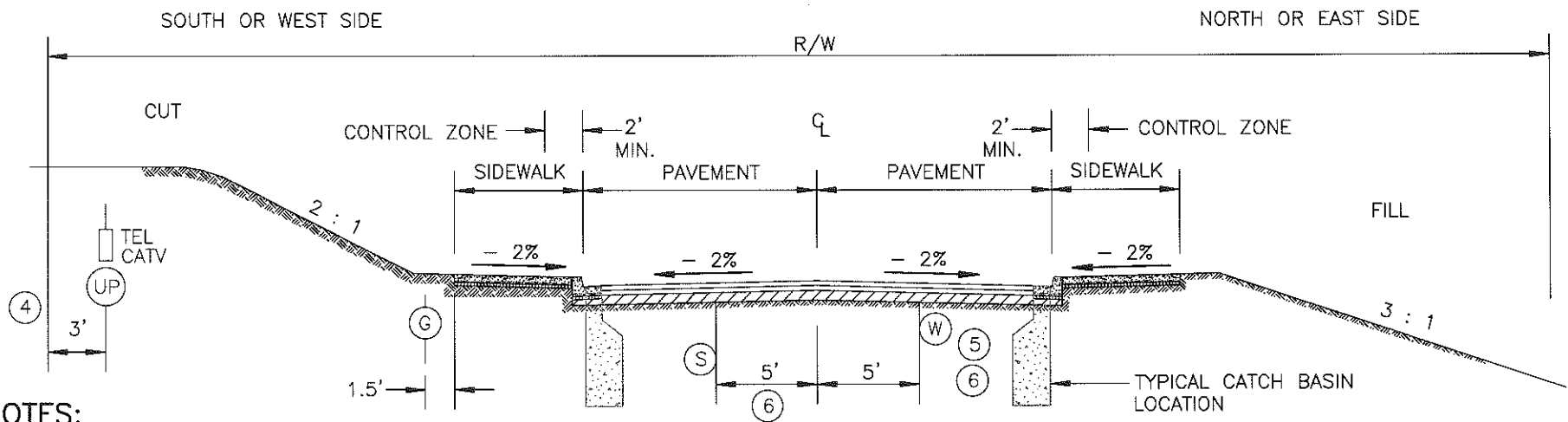
8-010

TYPICAL UTILITY LOCATIONS - SHOULDER SECTION

APPROVED BY:

Stuart E. Thompson 10-1-04
COUNTY ROAD ENGINEER DATE

UTILITY LOCATIONS SHOWN ARE FOR NEW CONSTRUCTION. INSTALLATIONS WITHIN EXISTING ROADS MAY VARY AND WILL BE EVALUATED AT THE UTILITY PERMIT STAGE ON A CASE BY CASE BASIS. NO UTILITY SHALL BE LOCATED DIRECTLY BELOW A ROADSIDE DITCH OR SWALE.



NOTES:

1. MINIMUM COVER AND SEPARATION FOR FIBEROPTICS, SANITARY SEWER, WATER, GAS, POWER AND NON-FIBEROPTICS TELEPHONE AND CABLE TELEVISION SHALL BE IN COMPLIANCE WITH FEDERAL AND STATE REGULATIONS.
2. POWER POLES AND OTHER ABOVE GROUND UTILITY OBJECTS SHALL BE PLACED OUTSIDE CONTROL ZONE AREAS UNLESS JUSTIFIED TO THE ENGINEER'S SATISFACTION BY SUITABLE ENGINEERING STUDIES CONSIDERING TRAFFIC SAFETY (2) SHIELDED BY A BARRIER, (3) PLACED IN AN AREA NORMALLY INACCESSIBLE TO VEHICLES OR (4) UTILIZING A BREAKAWAY DESIGN. INSTALLATION OF POWER POLES AND OTHER ABOVE GROUND UTILITY OBJECTS WILL NOT BE PERMITTED IN SIDEWALKS OR WALKWAYS.
3. CONTROL ZONE DISTANCES SHOWN APPLY TO ROADS WITH A POSTED SPEED OF 35 MPH OR LESS. CONTROL ZONE DISTANCES FOR ROADS POSTED AT GREATER THAN 35 MPH SHOULD BE DETERMINED ACCORDING TO CHAPTER 710, TRAFFIC BARRIERS, OF THE WSDOT DESIGN MANUAL.
4. POWER, TELEPHONE, CABLE TV AND GAS MAY SHARE THE SAME TRENCH IN RESIDENTIAL PLATS.
5. WATER LINE LOCATION TO BE DETERMINED BASED ON SITE CONDITIONS IN CONJUNCTION WITH THE WATER PROVIDER.
6. SANITARY SEWER AND WATER LINES SHALL HAVE 10 FT. MINIMUM HORIZONTAL SEPARATION AND 1.5 FT. MINIMUM VERTICAL SEPARATION FROM BOTTOM OF WATER LINE TO CROWN OF SEWER. REFER TO DOE "CRITERIA FOR SEWAGE WORKS DESIGN."

KEY

- (UP) UNDERGROUND POWER
- TEL CATV TELEPHONE, CABLE TELEVISION
- (G) GAS
- (S) SANITARY SEWER
- (W) WATER

SEE TEXT SECTION 8-02



SNOHOMISH COUNTY PUBLIC WORKS

8-020

TYPICAL UTILITY LOCATIONS - CURB SECTION

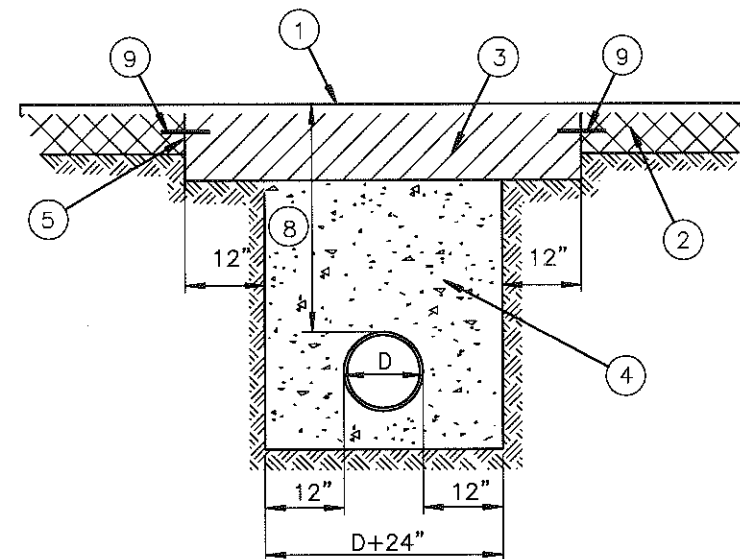
APPROVED BY:

Steven E. Thompson 10-1-04
COUNTY ROAD ENGINEER DATE

NOTES:

1. LONGITUDINAL TRENCH - 2" ASPHALT CLASS B OVERLAY.
TRANSVERSE TRENCH - 2" ASPHALT CLASS B OVERLAY WHERE
MULTIPLE CROSSINGS BY SAME UTILITY.
2. EXISTING PAVEMENT.
3. LONGITUDINAL TRENCH - 6" ACP OR 2" ACP + 4" ATB.
TRANSVERSE TRENCH - 8" ACP OR 2" ACP + 6" ATB. IF
CONCRETE, RESTORATION SHALL BE IN ACCORDANCE WITH
SECTION 5-05 OF THE WSDOT/APWA SPECIFICATIONS.
4. NATIVE MATERIAL, BANK RUN GRAVEL, CSTC OR CONTROL
DENSITY FILL MAY BE REQUIRED BY THE ENGINEER.
5. NEAT LINE CUT, CLEAN, HEAT & TACK EDGES WITH SEALER
CSS-1 & SEAL WITH HOT ASPHALT CEMENT.
6. TEMPORARY RESTORATION OF TRENCHES FOR OVERNIGHT
USE SHALL BE ACCOMPLISHED BY USING COLD MIX, ATB, OR
STEEL PLATES.
7. PATCH SHALL BE MACHINE ROLLED FLUSH WITH EXISTING
PAVEMENT AND SHALL BE PLACED PER SECTION 5-04 OF THE
WSDOT/APWA SPECIFICATIONS.
8. COVER DEPTH OVER UNDERGROUND UTILITIES SHALL
CONFORM TO FEDERAL AND STATE REGULATIONS.
9. TRENCHES IN CONCRETE PAVEMENT SHALL BE RESTORED
USING TIE BARS OR DOWEL BARS IN ACCORDANCE WITH
SECTION 5-05 OF THE WSDOT/APWA SPECIFICATIONS.

SEE TEXT SECTIONS 8-02, 8-04, 8-05.



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SNOHOMISH COUNTY PUBLIC WORKS

8-030

UTILITY TRENCH RESTORATION AND BACKFILL

APPROVED BY:

Steve E. Almon

COUNTY ROAD ENGINEER

2-28-03

DATE

GENERAL R/W USE RESTORATION REQUIREMENTS

1. AT THE ENGINEER'S DISCRETION, PRIOR TO COMMENCING ANY CONSTRUCTION, PHOTOGRAPHS DEPICTING PRE-EXISTING ROADWAY CONDITIONS WILL BE REQUIRED EVERY 50 FEET IN PAVED AREAS OR ANY OTHER LOCATION AS SPECIFIED BY THE ENGINEER.
2. SIGNING, FLAGGING AND TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THESE STANDARDS, THE WSDOT TRAFFIC MANUAL AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
3. ONE LANE OF TRAFFIC SHALL REMAIN OPEN AT ALL TIMES, ATTENDED BY FLAGMEN AND APPROPRIATE CONSTRUCTION SIGNING PROVIDED. THE ROAD SHALL BE RESTORED TO TWO-WAY TRAFFIC AT THE END OF EACH WORKING DAY. APPLICATIONS FOR TOTAL ROAD CLOSURES MUST BE FILED WITH SNOHOMISH COUNTY PUBLIC WORKS AT LEAST 5 DAYS PRIOR TO THE ANTICIPATED CLOSURE.
4. EXISTING DRAINAGE DITCHES, CULVERTS, ETC., SHALL BE KEPT CLEAN AT ALL TIMES. TEMPORARY DIVERSION OF ANY DRAINAGE SYSTEM WILL NOT BE PERMITTED WITHOUT THE CONSENT OF THE ENGINEER. ANY DRAINAGE CULVERT, CATCHBASIN, MANHOLE OR OTHER DRAINAGE STRUCTURE DISTURBED BY EXCAVATION SHALL BE REPLACED WITH NEW MATERIAL OR REPAIRED TO THE SATISFACTION OF THE ENGINEER. TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES SHALL BE EMPLOYED TO PROTECT ADJACENT PROPERTY AND STORM DRAINAGE FACILITIES.
5. GRAVEL SHOULDERS DISTURBED BY EXCAVATION SHALL BE SHAPED TO COUNTY STANDARDS AND PROVIDED WITH A MINIMUM OF 6 INCHES COMPACTED CRUSHED SURFACING TOP COURSE.
6. IF IN THE OPINION OF THE ENGINEER, WEATHER CONDITIONS DETERIORATE TO THE POINT WHERE THE TRAVELED ROADWAYS ARE UNSAFE FOR THE PUBLIC OR DETRIMENTAL TO THE RESTORATION OF THE ROADWAY, EXCAVATION SHALL CEASE IMMEDIATELY AND CLEANUP SHALL BE PROMPTLY ACCOMPLISHED.
7. ALL PIPE OR OTHER MATERIAL STORED ALONG COUNTY RIGHT-OF-WAY MUST BE PLACED AT A SAFE DISTANCE FROM THE TRAVELED ROADWAY IN SUCH A MANNER AS TO AVOID FALLING ONTO THE ROADWAY.
8. NO EXCESS OR UNSUITABLE MATERIAL SHALL BE WASTED ON COUNTY RIGHT-OF-WAY. ANY SUCH MATERIAL DUMPED ON PRIVATE PROPERTY MAY REQUIRE A GRADING PERMIT. VERIFICATION WITH SNOHOMISH COUNTY PLANNING & DEVELOPMENT SERVICES IS REQUIRED.
9. STREET SURFACES SHALL BE CLEANED AT THE END OF EACH DAY'S OPERATION WITH A POWER BROOM OR OTHER APPROVED MEANS.
10. NO OPEN CUT CROSSING OF COUNTY ROADS OR STREETS SHALL BE MADE WITHOUT THE APPROVAL OF THE ENGINEER.
11. MAXIMUM AMOUNT OF OPEN TRENCH IN ROADS SHALL BE 400 LINEAL FEET. AT THE END OF EACH DAY, ALL DITCHES MUST BE BACKFILLED OR COVERED WITH STEEL PLATES AND BARRICADED WITH FLASHING WARNING LIGHTS TO PREVENT PEOPLE OR ANIMALS FROM FALLING INTO THE TRENCH.
12. FINAL CLEANUP INCLUDING COMPLETE RESTORATION OF SHOULDERS, CLEANING OF DITCHES, CULVERTS AND CATCHBASINS, AND REMOVAL OF LOOSE MATERIAL FROM BACK SLOPES OF DITCHES SHALL NOT EXCEED 1500 L.F. BEHIND EXCAVATING OPERATIONS OR AS REQUIRED BY THE ENGINEER.

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SNOHOMISH COUNTY PUBLIC WORKS

8-040

GENERAL R/W RESTORATION REQUIREMENTS

APPROVED BY:

Stewart E. Norman 2-10-03

COUNTY ROAD ENGINEER

DATE